THE IRON AGE

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THURSDAY, OCTOBER 2, 1890.

The Munton Process of Manufacturing Steel Tires.

[*With Supplementary Sheet of Engravings.*]

The Chicago Tire and Spring Company, whose works are at Melrose, near Chicago, Ill., have built and had in successful operation for some time a plant for the manufacture of locomotive and car wheel tires and circular forgings which, in its method of treating steel, is a marked departure. James Munton, the superintendent, is the inventor of the new process and of the machinery for operating it. Throughout the whole process Mr. Munton has avoided, as far as possible, everything in the treatment of the steel which would tend to injure either its character or the quality of the finished tire.

The ordinary method of manufacturing tires is to cast a solid ingot of cylindrical shape, which is then heated and upset under a steam hammer until its hight is reduced and its diameter enlarged. After a hole has been punched in its center the ingot is then placed on a beak or pike horn and hammered by blows struck on the periphery. It is then again heated and placed in a rolling mill and rolled into a tire of the required diameter.

In his determination to improve upon old methods, Mr. Munton began at the root. He reasoned that to hammer a steel ingot down from say 18 inches in hight to 6 inches, and thus increase its diameter, was essentially wrong in principle, as the metal so tortured must stretch at the outside or periphery, thus tearing it apart more or less and producing cracks and strains. The Iron and Steel Institute of Great Britain has discussed thoroughly the effect of hammering steel for plates and shafts with the verdict that the violence of the hammer is detrimental to the steel for these purposes. Much more detrimental must hammering be to a tire ingot which is beaten upon its end and the diameter thereof increased some ten or fifteen inches, for which work manufacturers are now using up to twenty ton hammers, in order to do the work with the greatest rapidity. The tread of the tire must consequently be damaged, while the steel is densified or benefited on the inner portion of the tire where there is no wear. In Mr. Munton's process he avoids the use of the hammer altogether, and in elongating the ingot, or bloom, into a tire he densifies the metal on the tread and increases the wear resisting properties of the steel.

By way of preface to a detailed description of the new process it may be well to give a brief summary of the several steps taken, which are as follows:

1. The ingot is cast with a hole cored out large enough to admit a small roll.

2. The ingot is heated and taken to the rolling mill, where its top, with its imperfections, is sheared off and the bloom left of a given weight. At the same heat and by the same operation the bloom is also roughed out by the roughing rolls of the mill and edged down by horizontal rolls.

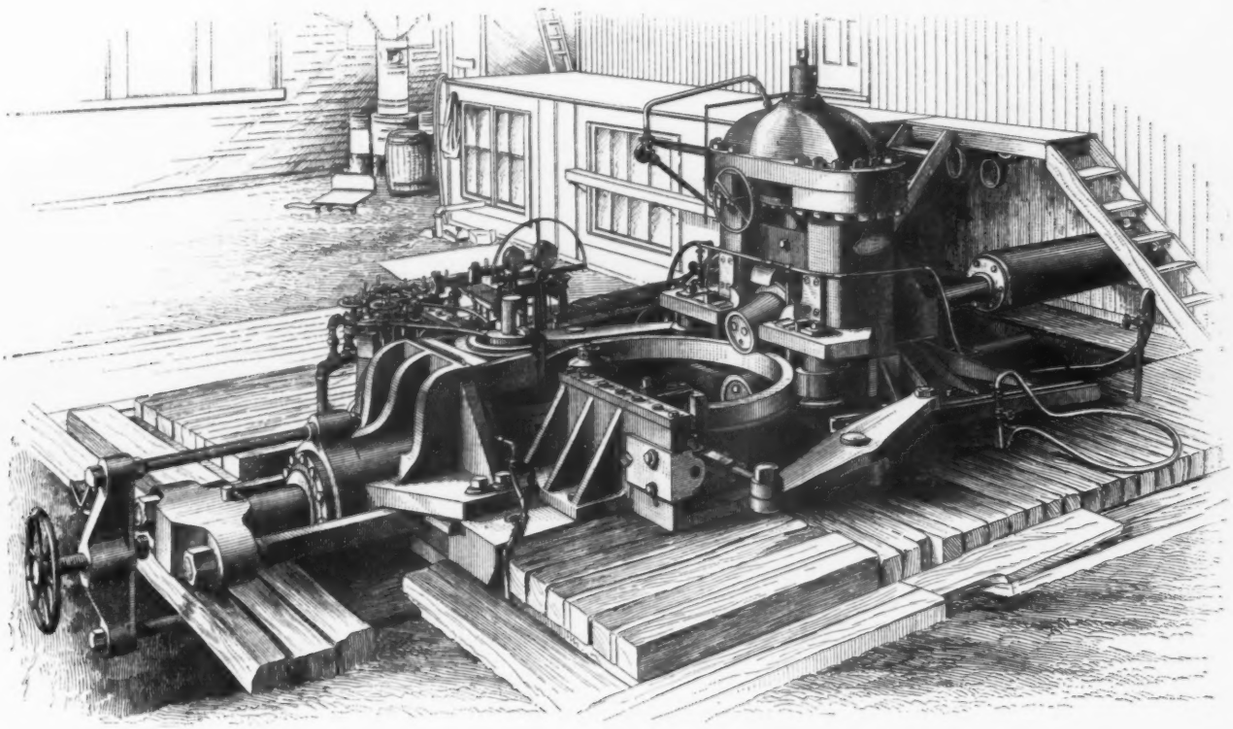
3. The bloom is reheated and placed in the tire rolling mill, where it is rolled and finished to the exact inside and outside diameter required.

Proceeding to details, the ingot will be first considered. Mr. Munton's present practice is to cast an ingot large enough for two or more tire blooms. He uses a collapsible steel core which he has invented. The steel is produced in an open hearth furnace and poured from a ladle into the molds over a spreader of circular form which covers the core and causes the steel to flow down on all sides, keeping any dirt in it flowing and thus collecting at the top. The subjoined illustration, Fig. 5, shows a cross section of an ingot as first cast, before slitting.

The casting of this ingot is a simple process, requiring no skilled labor. The ingot being thin radially, the interior cools much sooner than if it were solid, and the steel is therefore more dense, because the annular ingot cools from the inside as well as the outside, thus causing it to be more uniform and preventing liquation. The illustration, Fig. 6, shows a two-tire ingot partially slit, and also indicates the method by which the slitting is done.

At present the ingot is slit in the same mill which is used for finishing the tires. In slitting, two upright rolls are used. One roll operates upon the inside of the ingot, as shown above, while the other roll operates on the outside. The outside roll is driven. It has a sharply beveled edge as a top cutter, a projecting flange as a central cutter, and a bottom flange to support the base of the ingot. Grooves are formed in this roll at suitable places to partly shape the tread of the tires. The flanges all extend the same distance outward from the roll. The inside roll has projecting flanges to correspond with those on the outside roll, but shorter. An illustration is given in Fig. 7 of an ingot after the top has been sheared off and the remainder cut into tire blooms ready for finishing.

It will be seen that by this process blooms for tires or rings are manufactured very rapidly and therefore cheaply. The roughing done during the slitting process greatly assists the subsequent finishing. Mr. Munton has, however, patented improvements on this process by which two or more tires can be slit, roughed and finished at the same heat by using a separate finishing mill in conjunction with the slitting and roughing mill, or four tires could be finished at a single heat by



THE MUNTON PROCESS OF MANUFACTURING STEEL TIRES.

using two finishing mills in conjunction with one slitting and roughing mill. Tires made in this manner would be in absolute pairs, which is of prime importance. This advance in the art makes the process a continuous one analogous to the continuous process of making rails, the original melting heat of the ingot being utilized throughout the entire operation.

The removal of the top sedimentary portion of the ingot, as above described, will be recognized by all steel workers as a very valuable point.

One of the most important features of this process is the slitting of the ingots, which operation is so economical, beneficial and original in its conception that Mr. Munton was granted a process patent on this alone. As an illustration of what can be done, Mr. Munton states: "We have slit fourteen ingots into 42 blooms in one hour on our present mill which was not originally designed for slitting." These blooms were for small tires with internal flanges for electric motors.

used for rolling tires or rings of any section and diameter up to eight feet and rings up to 16 inches wide.

The vertical exterior pressure or slitting roll and the lower edging roll are driven by steam power. The engine has no flywheels, being built on the reversing principle so as to start or stop quickly. The

proper size. Further, if the bloom, after shearing and roughing, contains defects which require to be cut out, producing notches, the bloom can he rolled back to a smaller diameter and the defects caused to disappear, after which the tire can be rolled out to the proper diameter again. In rolling back to a smaller diameter, only the exterior and edging rolls are used, no internal pressure being applied, as that would defeat the purpose in view. The rolls are so arranged that all four sides of the tire in rolling out are covered, so that the metal cannot burst under the operation, as is possible with a hammered tire where only two opposite sides can be covered or operated upon at once. When the tire is being rolled back by the exterior pressure rolls and simultaneously operated upon by the edging rolls, it is reduced in diameter and the metal is crowded together and densified on the tread which is upset in the proper direction to promote its wearing qualities. Any desired amount of densification or work can be put upon the tire by rolling the tire outwards against the

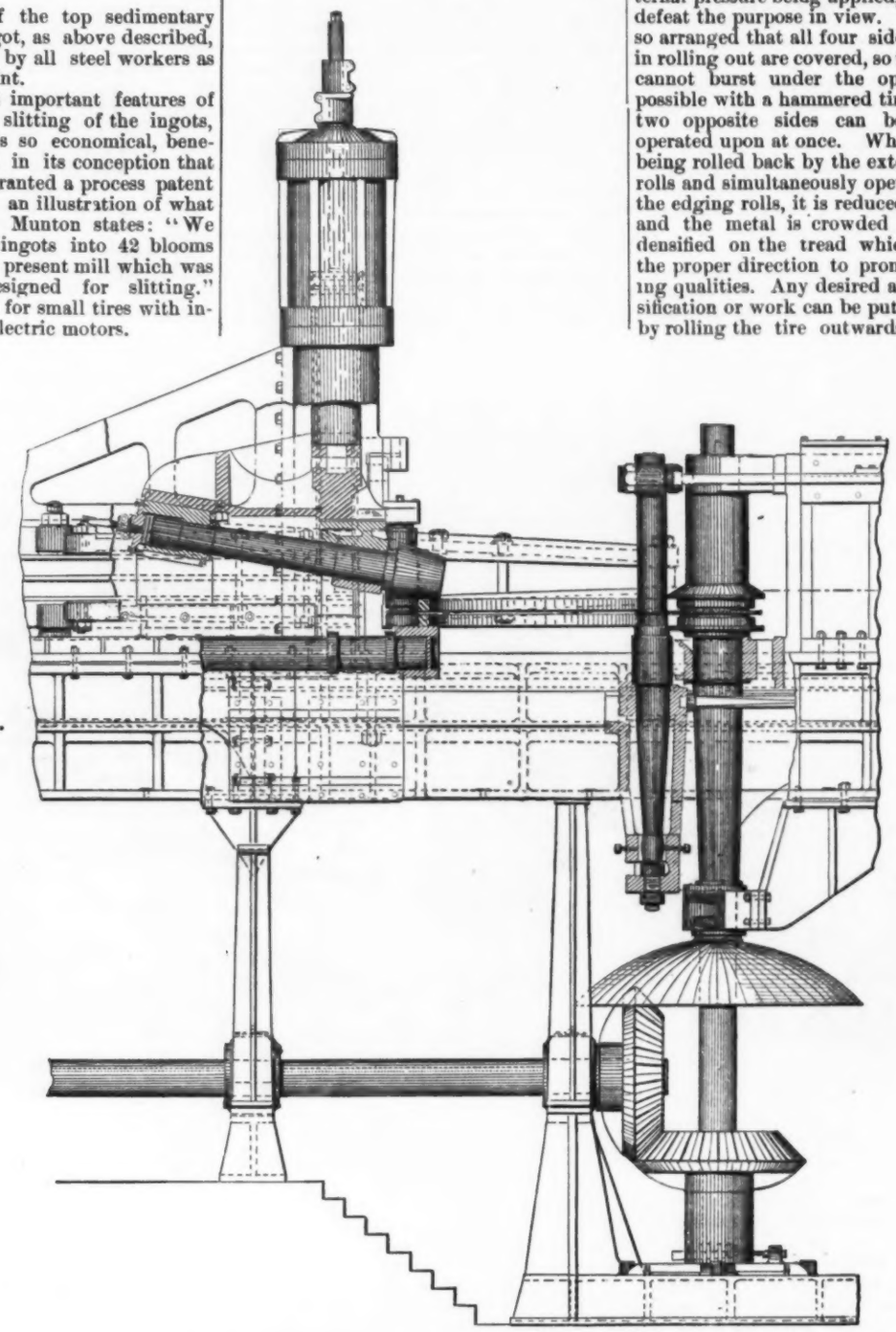


Fig. 4.—Side Elevation, Showing Mill Engaged in Rolling a Pair of Tires.

THE MUNTON TIRE MILL.

A perspective view of the present mill is given on our front page. It consists of an exterior fixed vertical pressure roll (which also operates as the slitter); a vertical inner pressure roll, with horizontal movement; two vertical guide rolls with horizontal movement; two vertical exterior pressure rolls with horizontal movement; and two horizontal or edging rolls, one above and the other below the bloom operated upon. The upper edging roll is moved vertically by the edging cylinder. This mill is a universal mill which can be

movable rolls are operated by hydraulic power, controlled by valves shown in the foreground of the perspective view. Thus the edging, interior or exterior rolls may either or all be brought into play upon the tire whenever desired, either simultaneously or one set at a time, so that the section of the tire, its size and diameter, are always under the complete control of the operator and can be instantly changed as desired. If the tire, through any accident, happens to be rolled of too large a diameter, it can be quickly rolled back to the

pressure of the exterior rolls, which pressure is varied as required. Thus it will be seen that the tire is given very great density, and that the steel can be forced into any required section, both on the tread and on the interior of the tire, even to the extent of forming a wide internal flange.

The method of operating and governing the various rolls employed will be better understood by the help of the detailed drawings herewith reproduced from plans prepared by Charles Quast, mechanical engineer of the company, for the

new mill now in process of construction. The first, Fig. 2, is a side elevation of the mill, showing its full length. The top of the bed plate is on the ground level and the machinery below it is therefore all under ground. The mill, as shown here, is engaged in slitting an ingot large enough to make four tires or two pairs. The next view, Fig. 4, shows the same mill engaged in rolling a pair of tires. The high massive framework extending above the general level of the mill is a slide operated by hydraulic power, which moves it back and forth on the bed plate. This slide carries the top and bottom edging roll and two vertical pressure rolls. A separate hydraulic cylinder is placed in the upper end of the slide to operate the movements of the edging roll. So completely has this roll been supplied with actuating machinery that it is capable of

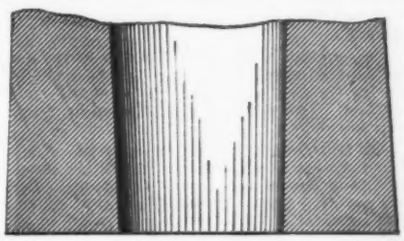


Fig. 5.—Cross Section of Ingot as First Cast.

being placed in almost any position. It will operate as a piston and advance or recede; it can be elevated or depressed; it can roll on a perfect level or at any bevel. The two vertical pressure rolls change their position and move to or from each other as may be required in rolling a tire. Connected with the slide by means of cams, levers and pivoted links are the vertical guide rolls on each side of the main exterior driven roll. These guide rolls thus automatically change their position in harmony with the two vertical pressure rolls attached to the slide, advancing and receding as the tire is rolled larger or smaller, but always moving in such perfect accord with the other rolls that the tire preserves a true circular form. The connection of these rolls with the slide is best shown in the plan view of the mill, Fig. 3. An ingenious device operated in connection with the slide is an index which describes an arc of a circle and points to the diameter attained by the tire then being rolled. This is a valuable aid to securing accuracy. The inside pressure roll is adjusted by a hydraulic cylinder which extends under the bedplate back of the main exterior roll. When two or more rings or tires are being rolled the inside pressure roll would not be sufficiently rigid to endure the strain without a top support. The slide which carries this roll is therefore provided with a swinging hanger furnished with a box or bearing for the upper end of the roll. This hanger will raise and turn back out of the way automatically when the blooms or rings are being placed in or taken out of the machine.

It will be seen from the above description of this mill that it is so largely automatic that very few men are required to operate it. This has been the case from the beginning, but even fewer men are now needed than then, by reason of improvements which suggested themselves as the mill became susceptible of closer study in practical operation. The saving in time and labor by this process employed by the Chicago Tire and Spring Company, is estimated at 30 per cent., as compared with the old method. As the tires are claimed to be much better, because the steel has not been tortured by hammering, the Munton Mill certainly appears to have great advantages over the old system.

Mr. Munton has taken out patents on his mill and process in Great Britain, Germany, Italy, France, Austria, Belgium, Russia, Norway and Sweden.

The magnitude of the new mill will be readily seen from the following dimensions: Its entire length will be 80 feet; its hight, 44 feet—20 feet below and 24 feet above the level of the ground; its width, 21 feet; its calculated weight 391 tons. The bed plate will be built in six sections, with a whole length of 54 feet 10 inches and weight of 126 tons. The inside pressure cylinder will be 20 inches in diameter; its weight 12 tons. The edging cylinder will be 20 inches in diameter; its weight 8 tons. All the cylinders will be constructed to carry 5000 pounds hydraulic pressure per square inch.

The power required for the operation of the mill will be furnished by a pair of compound condensing engines developing 2000 horse-power at 80 revolutions per minute with an initial pressure of 100 pounds; the diameter of the high pressure cylinder is 28 inches and of the low pressure cylinders 47 inches by 48 inches stroke. The engine shaft will be connected with the 17-inch main driving shaft, which carries a helical spur wheel of 71 inches diameter and 20 inches face, which matches on the top with a 63-inch helical spur wheel to drive the 12-inch bottom edging shaft at 90 revolutions a minute. The 71-inch spur wheel also matches into a 98-inch wheel below it to drive the 13½ inch bottom driving shaft at 60 revolutions a minute and this shaft, through a pair of miter gear wheels of 60-inches diameter, drives the vertical exterior pressure shaft of 16½-inches diameter.

This mill is designed to slib and bloom ingots for four tires simultaneously and to roll tires or rings of any section and diameter up to 12 feet or for rolling plain steel bands for any purpose required, such as boiler shells, gun rings, &c., ranging from

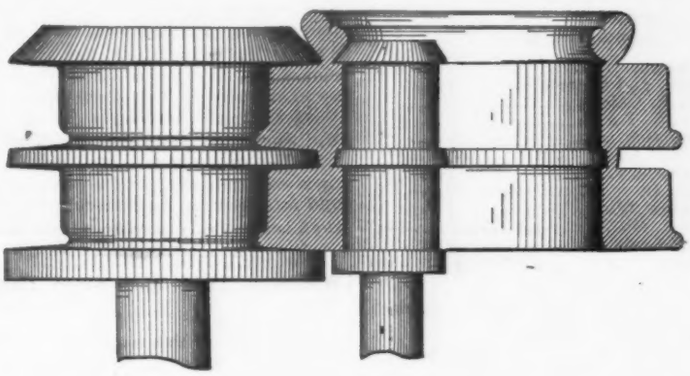


Fig. 6.—Two-Tire Ingot Partially Slit.

22 inches to 12 feet diameter and from 2 inches to 4 feet wide, and from ⅛ of an inch to any thickness required.

Much is expected of the new French cruisers Charnec, Bruix, Chanzy and Latouche-Treville. They are expected to make a 17-knot speed with about 6600 horse-power under natural draft, and 19 knots under forced draft and 8200 horse-power. The coal supply at normal displacement will give a radius of action, at 10 knots speed, of 4000 knots, or just about the same as the capacity of the cruiser Baltimore, of the United States Navy. The estimated cost of the first two named, inclusive of hull and machinery, which are being built by the French Government, at Rochefort, is $1,778,000. The contract price for the other two, being constructed by private firms, is, including machinery, $1,636,000. The Trehouart, Bouvines, Jemmapes and Valmy are the names of four others of the new cruisers. The first-named is being built by the Government at an estimated cost of $2,780,000, and the others are being constructed at private contract. As regards the hull the four vessels are identical, and each will have a displacement of 7000 tons. The Trehouart will be supplied with the Belleville tubulous boilers, and the others will

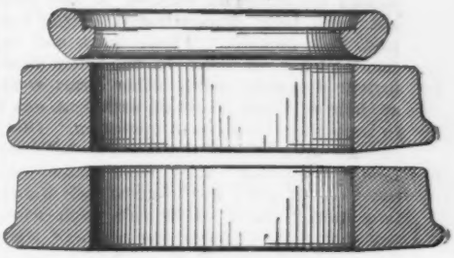


Fig. 7.—Ingot After Top Has Been Sheared Off and Remainder Cut Into Tire Blooms.

be furnished with multitubular boilers with the return flame system. The expected speed of each of these vessels, at natural draft, is 16 knots, with the engines making 100 revolutions a minute. The water line is to be armor clad from one end to the other. Their hulls are to be of the Martin-Siemens steel, and the stem and stern are to be of cast steel. Each will be armed with two 13-inch guns, four 4-inch quick firing guns, four guns of 47 mm. (a little less than 2 inches in diameter), ten Hotchkiss guns of 37 mm. and two torpedo throwers.

There was launched from Cramp's yard, in Philadelphia, on Saturday, the freight steamship El Sol, the largest of her class in the coastwise trade. She is owned by the Pacific Improvement Company, and will trade between New York and New Orleans. The ship is 400 feet long, 48 feet beam and 33¾ feet deep, and has a capacity of 4300 tons. She is schooner rigged, with four steel masts. Her power is furnished by triple expansion surface condensing engines, with high pressure cylinders 32 inches in diameter, intermediate 54 inches and low pressure 84 inches, with 84-inch stroke, with a working pressure of 160 pounds. She has three double-ended cylindrical steel tubular boilers, each 13 feet 10 inches in diameter and 20 feet 6 inches long, each weighing about 58 tons. Her machinery will develop 3500 horse power, and she will have a speed of 14½ knots per hour.

The Governor-General of Canada made an inspection of the great St. Clair tunnel and highly complimented engineer Hobson for the skill exhibited in its construction.

The Coke Trade.

The shortage of cars in the Connellsville coke region which has existed for some time has been partially removed, and operators and furnace men are correspondingly happy. During the spring and summer, when the coke trade was rather dull, two or three firms accumulated an immense stock of coke in order to be prepared for any strike or shortage that should occur. The wisdom of this plan has been fully demonstrated during the past two months. These firms had on hand plenty of coke to meet the most urgent demands, while other firms were at their wits' end to obtain sufficient coke to keep their furnaces in operation. During last week some of the furnace operators in the Mahoning valley were almost entirely out of coke, and to meet their wants two special trains of 80 cars each were sent out of the Connelsville region. Had this not been done it is probable that a number of blast furnaces would have been compelled to bank down for a few days until a supply could have been obtained. The demand continues heavy and shows no signs of abatement. The shipments for the week ending on September 20, amounted to 6619 cars, divided as follows: To Pittsburgh and river points, 1560; to points west of Pittsburgh, 3900; to points east of Connellsville, 1159. The record of the previous week was: Pittsburgh, 1620; West, 3645; East, 1090; total, 6355. The total number of active ovens in the region for the same period was 13,569 and 1905 idle ovens. The completion of 250 ovens at Leisenring No. 3, completing the 500-oven plant there, has swelled the total number of ovens owned by the H. C. Frick Coke Company to 9054 out of a total of 15,474 in the entire Connellsville region. There are no changes to note in prices, which continue as follows: Furnace coke, $2.15; foundry coke, $2.45; crushed coke, $2.65; all per ton of 2000 pounds, f.o.b. cars. Freight rates per ton of 2000 pounds from the Connelsville region, which includes any part of it, to points of consumption are as follows:

To Pittsburgh	$0.70
Mahoning and Shenango valleys	1.35
Cleveland, Ohio	1.70
Buffalo, N. Y.	2.25
Detroit, Mich.	2.35
Cincinnati, Ohio	2.65
Louisville, Ky	3.20
Chicago, Ill	2.75
Milwaukee, Wis	2.85
St. Louis, Mo	3.35
East St. Louis	3.20
Baltimore	2.17
Boston	4.00

This will make prices at these points of consumption, as follows:

Point.	Furnace.	Foundry.	Crushed.
Pittsburgh	$2.85	$3.15	$3.35
M. and S. Valleys.	3.50	3.80	4.00
Cleveland	3.85	4.15	4.35
Buffalo	4.40	4.70	4.90
Detroit	4.50	4.80	5.00
Cincinnati	4.80	5.10	5.30
Louisville	5.35	5.65	5.85
Chicago	4.90	5.20	5.40
Milwaukee	5.00	5.30	5.50
St. Louis	5.50	5.80	6.00
E. St. Louis	5.35	5.65	5.85
Baltimore	4.32	4.62	4.82
Boston	6.15	6.45	6.65

A suit against a coal combine that controls prices has been commenced in Nashville, Tenn., in the United States Court, by the Attorney-General of the State. The petition alleges that prices are fixed by the combine at which coal shall be sold in Nashville, and that local dealers undertake not to buy from any mining company not a member of the Exchange, while the mining companies agree not to sell to any Nashville dealer who is not a member. The petition asks for an injunction in accordance with the provisions of the Anti-Trust law passed by Congress on July 2. It is supposed that the petition will come up before Judge Jackson at the next regular term, which will be held in October. The coal companies interested are the Jellico Coal and Coke Company, Standard Coal and Coke Company, Memphis Coal and Mining Company, Tennessee Coal, Iron and Railroad Company, and the Cumberland Valley Colliery Company, all of Tennessee, and the Woolbridge Jellico Company, Central Coal and Iron Company, Empire Coal and Mining Company, St. Bernard Coal Company, Mud River Coal and Iron Company, Co-operative Coal Mining and Manufacturing Company, Providence Coal Company, Hecla Coal and Mining Company, and the Green River Coal Company, all of Kentucky.

Large Refrigerating Plant.

The Fred. W. Wolf Company, engineers and architects, of No. 560 North Halsted street, Chicago, and sole owners for the United States of the Linde ice machine patents, have just completed for the George F. Swift Company, at the Stock Yards, what is claimed to be the largest refrigerating plant constructed in the world. It has a refrigerating capacity equal to the melting of 800 tons of ice daily, and to operate the machinery requires two 500 horse-power Corliss engines. It keeps their immense storage rooms at an equitable and even though exceedingly chilly temperature, and is a model of engineering skill.

Since Mr Wolf first introduced the Linde ice machine, in 1883, to the brewing, packing and other interests requiring the use of large quantities of ice or cold air, they have been in all cases universally successful, but never before has been erected a machine of the size or capacity of this, which is, nevertheless, as successful in its operation as the smallest machine made by them. The Linde is the only machine that can be run by belt motion even in the largest sizes, and in the Swift plant there are several groups of four 50-ton machines run by one belt. The daily capacity of the Linde machines now in use represents about 35,000 tons of melting ice; those built by the Wolf Company, and now in use in the United States, representing 7500 tons. This last production is well worthy a visit from engineers and persons interested in ice and refrigerating machinery, who will find it an exceedingly interesting study.

Wellman Iron and Steel Company.

The works of this company are situated at Thurlow Station, on the Philadelphia, Wilmington and Baltimore Railroad, 16 miles from Philadelphia, Pa. The works also have the tracks of the Philadelphia and Reading Railroad running into the yard, and through this line a connection with the Baltimore and Ohio system. The property covers about 40 acres of ground, the Delaware River being on one side and the railroads on the other. Steamers of the largest size can unload at the wharf. There is one blast furnace of 17 feet bosh, 72 feet high, using foreign ores, making an iron of the best quality for the manufacture of steel. The open hearth plant consists of two 15-ton furnaces, well equipped with hydraulic cranes, &c. The Bessemer plant consists of two 3-ton converters, with the necessary cupolas, blowing engines, hydraulic plant, &c. The blooming mill is in connection with the Bessemer plant and is a reversing mill with 30-inch rolls. In it can be rolled 16½-inch square or smaller open hearth and Bessemer ingots into blooms as small as 4-inch x 4-inch or slabs up to 16 inches wide and down to 1¼ inches thick. The plate mills consist of a two high train with 30-inch rolls, 80 inches and 100 inches long; a 25-inch three high mill with 72-inch rolls. A larger three high mill will be added immediately.

The company have also 11 double puddling furnaces for the production of puddled bar for iron plates. The officers of the new company will be as follows: S. T. Wellman, president; Wm. G. Neilson, vice-president; John P. Crozer, treasurer; Richard Peters, Jr., secretary. The general office of the company will be at Thurlow, Pa., with a branch office at No. 335 Walnut street, Philadelphia, Pa., a private wire connecting the two.

NEW ENGLAND NOTES.

The electric light and power plant at Veazie, Maine, is almost completed. Six of the immense water wheels have been placed in position and the pits for nine more are being constructed.

The engine in the new Auburn Stove Factory, at Auburn, Maine, has just been started up for the first time and the shafting set in motion. The works will be started up in full in a few days.

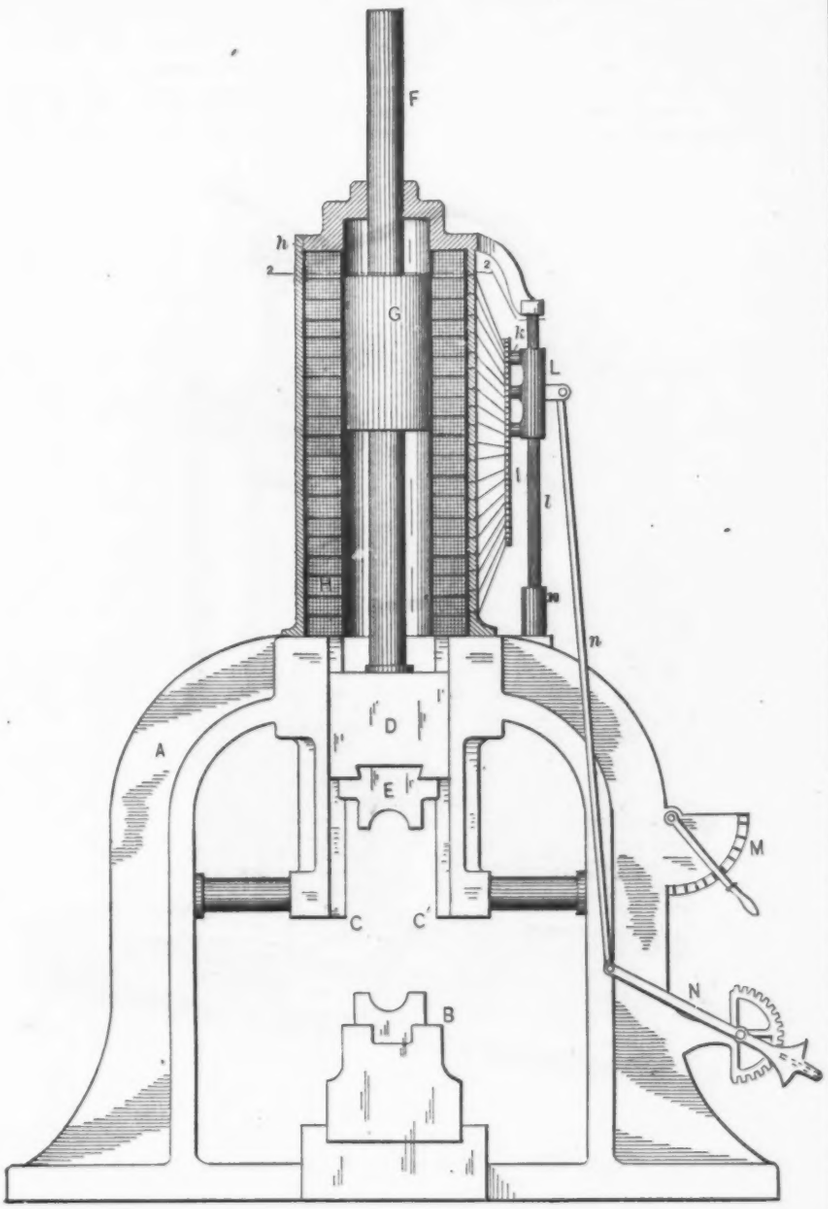
In Hartford, Conn., a number of citizens have organized what they will call the Board of Trade Room and Power Company. They propose to erect a building suitable for the accommodation of a number of small manufacturing enterprises. The building will be first class, equipped with a power plant and tools, and will be divided into as many rooms as may seem advisable. The idea is to rent these rooms to inventors or mechanics who may have undeveloped ideas relating to machinery at low rates, and to give them such other assistance as may seem advisable, in a mechanical way. Such ideas as seem to be good will then be considered by the Board of Trade, and such action taken as may be deemed advisable to place the enterprise on a proper financial footing.

The Connecticut Motor Company of Plantsville, Conn., have issued a very neat catalogue of electric motors. The catalogue sets forth the advantages of electric motors, the illustrations being excellent.

The process of electric welding invented by Prof. Elihu Thomson, which has been so widely used in its application to numerous manufactures pertaining to the arts of peace, has now been applied to the production of certain munitions of war in a very remarkable manner. The problem in making a shell for armor piercing purposes has been to select a grade of steel with a view to its possessing the hardest point for armor piercing purposes consistent with a chamber whose walls shall not be so hard as to crumble on striking a heavy mass. The metal selected for such purpose has been very naturally the result of a compromise in the endeavor to procure a metal which would give as hard a point as feasible under the circumstances, and yet the limitations of all materials are such that neither object has been perfectly accomplished, and the excessive hardness of the outside of ordinary cast steel projectiles renders the work of clearing out the interior of the chamber very expensive. This application of the electric welding process to the production of shells has reached very satisfactory results—entirely beyond those achieved by methods of manufacture hitherto carried on. The armor piercing point of the shell is made of hard steel shaped in a conical form suited for such a purpose; to this is attached a tube of mild steel forming the chamber. The plastic state of the metal when the two pieces are pressed together in the act of electric welding forms a slight enlargement without cutting away any of the walls of the chamber. The butt of the projectile is made of a piece of mild steel, which is somewhat harder than the cylindrical walls of the chamber and is shaped to a cup form by hydraulic forging. The slight exudation of the metal at the walls on the inside produces an interior ring, which is a material increase in the strength of the projectile. For shrapnel the thin metal screen between the charge and the bullet case is placed in position before the head is welded to the cylindrical chamber of the projectile and is readily joined in place in the act of welding. This new application of the electric welding process was invented by Lieut. H. M. Wood, United States Navy, who has received a year's leave of absence from the Government and is in the meantime associated with the Thomson Electric Welding Company, of Lynn, Mass. It is stated that the United States Government is ready to contract for a very large supply of these electric shells as soon as the machinery can be made for their manufacture.

Electric Power Hammer.

This electrically actuated power hammer is of the reciprocating type, the part delivering the blow being connected directly with the reciprocating piston by which the power is imparted. The piston is of magnetic material and moves within a vertically arranged series of coils connected in series and each being provided with a separate insulated contact. The actuating mechanism is mounted vertically in a frame resembling that of the ordinary steam hammer.



ELECTRIC POWER HAMMER.

Between the lugs of the frame is placed an anvil, B, to receive the work. Between the guidways CC′ moves a cross-head carrying the hammer E, and provided with a piston rod, F, which is secured to the magnetic piston G. This piston moves vertically within a series of coils, H, arranged one above the other in the magnetic envelope *h*, which is a cylinder standing on top of the frame. The coils are all connected in series and each one is provided with a separate insulated contact, these being arranged in the form of a flat commutator, I. During the operation of the machine the piston reciprocates continually in a constant but changing field of force, within which it may be said to float, rising and falling in accordance with the rise and fall of the current above and below it. By moving the shifting field of force to any desired part of the coils the position in which the piston will reciprocate can be changed at will and a blow delivered wherever desired—that is, the hammer can be made to strike directly on the anvil or any distance therefrom within the limit of construction. Provision is made for regulating the current passing through the coils from the points of maximum and zero electromotive force. Provision is also made for governing the rate of reciprocation of the piston. The stroke of the piston is varied by adjusting the brush carrier L up or down upon the commutator I, by means of the lever N, which is connected to the brush carrier by the rod *n*. The vertical series of coils may be made of any desired hight, in order to give the required range of action, and the brushes *k* spaced to include two or more coils, and so to determine the length of stroke of the piston. This hammer is the invention of Charles J. Van Depoele, of Lynn, Mass.

Russia has refused to give General Butterfield the desired concessions for a railroad to Siberia.

SOUTHERN MISCELLANY.

The National Railroad Forging Machine Company, with a capital stock of $200,000, have been incorporated at Covington, Ky., by J. S. Pessenger (New York), and others.

A rolling mill of a daily capacity of 100 tons, and to cost $200,000, is projected at Sheffield, Ala., by U. G. Chamberlain and others.

The Piedmont Foundry and Machine Company, at Piedmont, Ala., have put their newly finished plant into operation. Among their first orders was $3000 worth of cotton working implements for Geo. Featherstone, of Cedartown, Ga. It is stated by the company that the business prospects are sufficient to encourage the statement that the plant will be very much enlarged in a short while.

A foundry is being added to the machine shops of the Batesville Iron Works, at Batesville, Ark

The Dunlap Iron and Railway Company, recently organized at Chattanooga, Tenn., have secured control of 22,000 acres of coal and iron lands, near Dunlap, Tenn. This extensive tract is near the Inman iron seam, and there are three veins of fine coking coal. The iron on this property is regarded as among the very richest in the Sequachee Valley. A railroad it to be built to the coal mines, and will be known as the Chattanooga, Dunlap and Louisville Railway. The officers elected for the first year are: President, James H. Hoffecker, of Wilmington, Del.; first vice-president, John H. Russell, of Olustie, Fla.; second vice-president and general manager, O. J. Sheridan, Chattanooga; secretary, C. F. Adams, Jacksonville, Fla.; treasurer, George E. Downing, South Pittsburg, Tenn.

It is now said to be a settled fact that the Richmond and Danville Railroad Company will locate their machine shops and round house at Charlotte, N. C., where a site has been purchased, and where work on the main buildings, it is stated, will shortly commence.

The Harriman Tack Company, with a paid up capital of $20,000, have bought the equipment of the Auburn, N. Y., Tack Company, and will remove it to Harriman, Tenn.

The South Boston Iron Works, of South Boston, Mass., which are to be removed to Middlesborough, Ky., will have a main building that will be 1400 feet long by 150 feet wide, within which will be three large cupolas and two hot air furnaces, one with a capacity of 25 tons, the other of 15 tons. It is stated that the transfer of power to the different machines and the apparatus for hauling coal and iron will be by electricity. There will be four dynamos, two of 700 incandescent lights each, for illuminating purposes, the remaining two for the purpose of generating power. This immense building will be hung with heavy traveling cranes that run its entire length, in order to handle the work with celerity and convenience.

At Montgomery, Ala., a company with $200,000 capital stock has been incorporated by Charles Webster, of Philips, Wis.; W. A. Burr, of Stephens' Point, Wis., and Edward Gilbert, of Oshkosh, Wis., for the purpose of establishing car works in Montgomery. The company are now in the market for $35,000 worth of machinery, and will shortly begin work on their buildings.

The Beaver Tube Company have been incorporated at Wheeling, W. Va., and will begin the erection of their plant shortly. It is stated that the capital stock of this company is $1,000,000.

The Dixon Car Wheel Company, of Houston, Texas, having recently enlarged their foundry, are now able to melt 14 tons of pig metal per hour, and can turn out 2300 car wheels per month.

The Long & Jewiss Foundry and Machine Company, of Decatur, Ala., report encouraging prospects in their lines, and say that they are three months behind their orders.

The No. 4 coke furnace of the Woodstock Iron Company, at Anniston, Ala., will soon go into blast, and, together with the other coke furnace operated by this company, will have a weekly output of 1600 tons of coke iron. Their No. 1 charcoal furnace, after undergoing repairs, is again in blast, and, with No. 2 charcoal furnace, will produce about 700 tons per week. The coke furnaces of this company are preparing to be equipped, it is stated, with a new engine, manufactured by E. P. Allis & Co., of Milwaukee, Wis. The engines heretofore in use were incapable of doing the heavy work required.

Riter & Conley, of Pittsburgh, Pa., have recently signed a contract with the Cumberland Gas and Iron Company, of Cumberland, Tenn. for the construction of a charcoal iron furnace 13½ x 60 feet.

The plow foundry of the Birmingham Agricultural Works, at Birmingham, Ala., is to be

enlarged by the addition of new machinery, and the manufacture of all kinds of agricultural implements will be engaged in.

An iron foundry is being added to the implement factory of the Moffat Mfg. Company, at Chester, S. C.

The capital stock of the Henderson Steel Company is to be increased to $100,000 additional, in order to provide funds for the construction of another furnace, bloomery and other improvements contemplated.

Capitalists from Lansing, Mich., are reported as organizing a company at Dallas, Texas, for the purpose of manufacturing agricultural implements in the last named place.

The Frog Mountain iron ore tract, near Piedmont, Ala., has recently been purchased, it is stated, by the De Bardeleben Coal and Iron Company, of Bessemer, Ala.

The Georgia Southern and Florida Railroad Company will establish machine shops and a round house at Macon, Ga.

The name of the company recently organized at Bluffton, Ala., to establish car wheel works in that place, is the Bluffton Car Wheel Company.

The Atlanta Novelty Mfg. Company, with a capital stock of $300,000, have been incorporated at Atlanta, Ga., by C. R. King, W. T. Besonette, W. C. Smith and others, for the purpose of manufacturing novelties in wood and metal.

The Embreeville Iron Company, of Embreeville, Tenn., are said to have awarded a contract for the construction of their blast furnace to the Pittsburgh Engineering Company, of Pittsburgh, Pa.

At Chattanooga, Tenn., the Fidelity Coal and Iron Company have been incorporated by Morris Schwerin, M. W. Platzek, Robert Prichard, B. S. Thomas and C. W. Brown.

At West Point, Tenn., the West Point Mining and Mfg. Company have been organized for the purpose of mining iron ore in that vicinity. The company have a capital stock of $40,000, and the following are the officers: W. A. Hudson, of Florence. Ala., president; A. J. McGarry, vice-president; Wade Allen, secretary.

The Etowah Iron Company, of Cartersville, Ga., are preparing to equip their narrow gauge railway with additional rolling stock.

The T. R. Evans Foundry, at Chattanooga. is completing for the Soddy Company 8-foot hoisting engine drums.

The work of constructing the plant of the North Chattanooga Mfg. Company was recently begun, and is now well under way; when in operation this concern will manufacture mill machinery and sawmill equipments.

A Powerful Corliss Engine.

The Philadelphia Traction Company are just now making alterations in their engine stations. The alterations consist in the erection of two new Corliss engines in the Sansom street and the Twenty-third and Market street stations.

The old engines, two of which are in each station, will be kept in position, so that if anything breaks about the new ones the cable can still be kept in motion. The machinery is to be so arranged that the old engines can be attached to the new drums. Workmen have been toiling in the Sansom street station for weeks, and it is expected that by November 1 the big engine with all its appendages will be in running order. An exact duplicate will then be put in the Twenty-third and Market streets stations. The new engine, which, like the old one, is from the shops of Robert Wetherill & Co., of Chester, is the largest one in Philadelphia. It is of 1000 horse-power, and fed by eight boilers. It is a vertical Corliss engine, 28 feet high, and the cylinder is mounted on an A frame, which is supported on the main bed casting, in which is mounted the engine shaft. The cylinder is 40 inches in diameter and the stroke is 48 inches. A winding stairway with upward of 30 steps leads from the bed casting to the top of the engine.

The length of the bed casting upon which the engine stands is 18 feet long by 11 feet in width. A shaft 62 feet long and 18 inches in diameter and weighing 35 tons is set in six journals and conveys the power from the engine to the cable drums and idlers. The shaft was cast in four pieces, each 15½ feet long, so as to render the handling of it easier. The journals each weigh 4½ tons. The shaft extends from the engine, which is in the northwestern corner of the building, to the other end of the room, where is stationed a new upright drum and appendages. On the left side of the engine is suspended the balance wheel, 24 feet in diameter, with a square rim 15 inches wide and weighing 40 tons. The wheel was cast in ten segments. To the left of the balance wheel and in front is the spur gear wheel, to which the main shafting is attached. The gear wheel is 22 feet in diameter and the cogs are 6½ inches apart from center to center, the whole thing tipping the beam at 22 tons.

The engine, including the bed casting, gear wheel and clutch coupling, weighs 125 tons. The other part of the new machinery, including cable drums, idlers, shafting and pedestals, came from the Pennsylvania Iron Works, and, altogether, weighs 175 tons, making a total of 300 tons of machinery.

The new cable drums and idlers are different from the old, and will be in a vertical position, the idler standing above the drum. Two of these are already in place, one near the center of the room and the other at the east end. Two more of the same kind will be located on the Sansom street side.

The drums and idlers are 12 feet in diameter, mounted on a heavy frame work of cast iron, and weigh 12 tons apiece, the four sets making a total of 96 tons. These wheels were put in a vertical position, as was the engine, to save ground space. The amount of room is limited.

The engine and the other machinery are built upon a foundation from 18 to 20 feet deep and made of brick grouted in the best Portland cement. Over 300,000 bricks were used in making this substantial and unyielding bed.

Hydraulic Presses and Shears Driven by Steam Intensifiers.

A system of driving hydraulic shears and other presses by steam intensifiers has been developed on a large scale in Germany by R. M. Daelen, of Duesseldorf, the firm of L. W. Breuer, Schumacher, Ralk, near Cologne, being the manufacturers. It is claimed that it has proved the simplest and most economical in the use of steam and the cost of installation

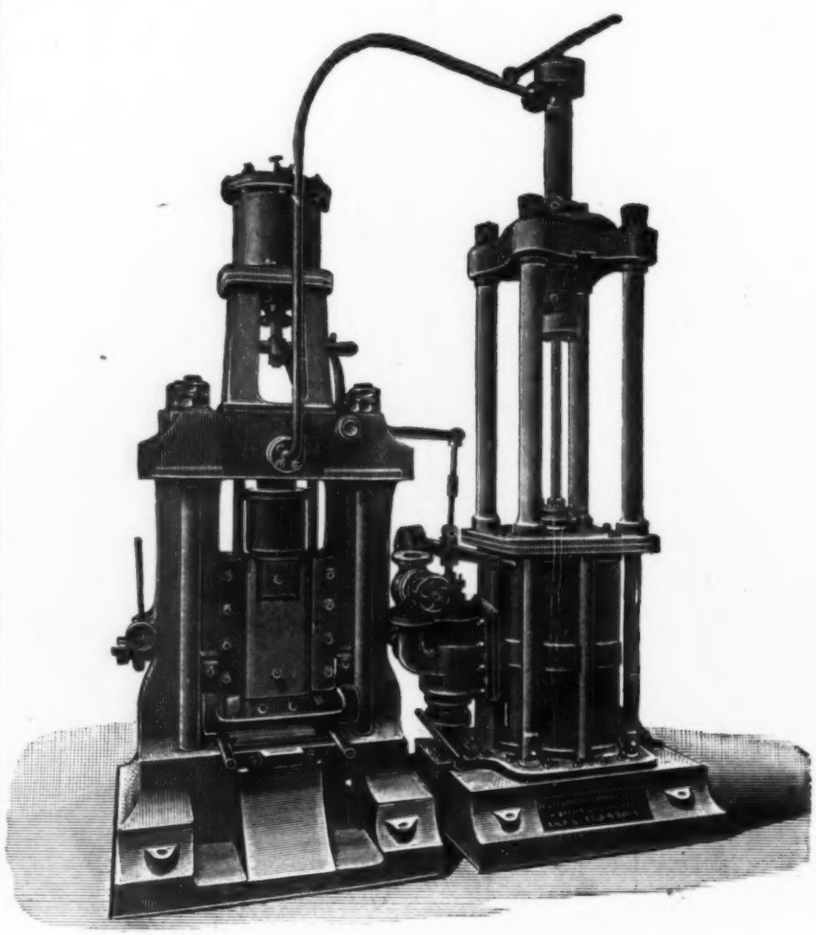


Fig. 1.—The Daelen Shear, with Intensifier.

and repairs. When hydraulic power is used for ingot shears, forging and stamping presses, the water pressure must be very high—up to 7000 pounds per square inch—in order to obtain cylinders of small diameter. It is difficult to maintain such a distribution of water at high pressure as will guard against the slightest escape of water and the consequent loss of power. By the employment of the intensifier the distribution is transferred to the steam, and there is only a short pipe from the pump to the large cylinder of the press, so that there is no loss of water.

Another difficulty of the hydraulic installations with steam pump and accumulators of high pressure is that the same pressure acts every time upon the piston of the press, while the resistance which it is to overcome is in the most cases variable. This leads to considerable losses of power. The steam intensifier produces a weaker pressure, which corresponds to

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THE MUNTON PROCESS OF MANUFACTURING STEEL TIRES.

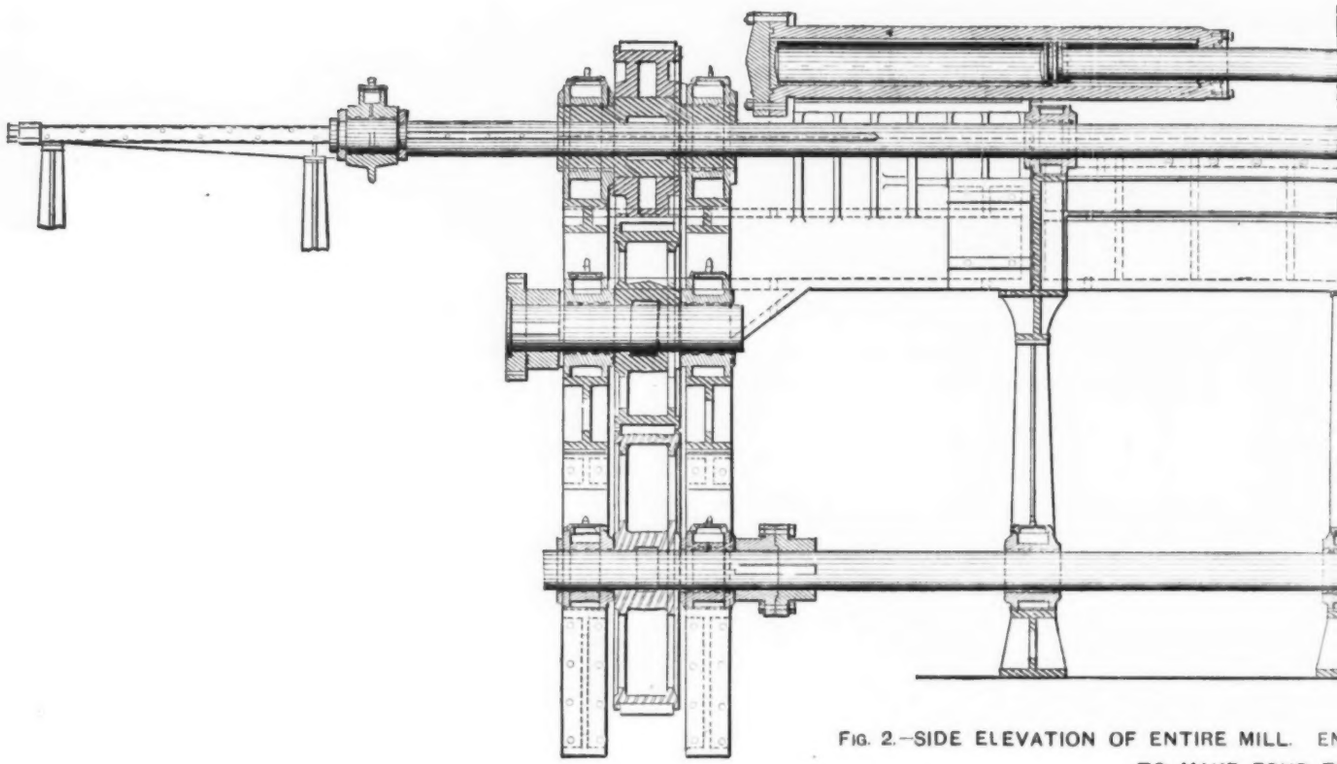

FIG. 2.—SIDE ELEVATION OF ENTIRE MILL. EN
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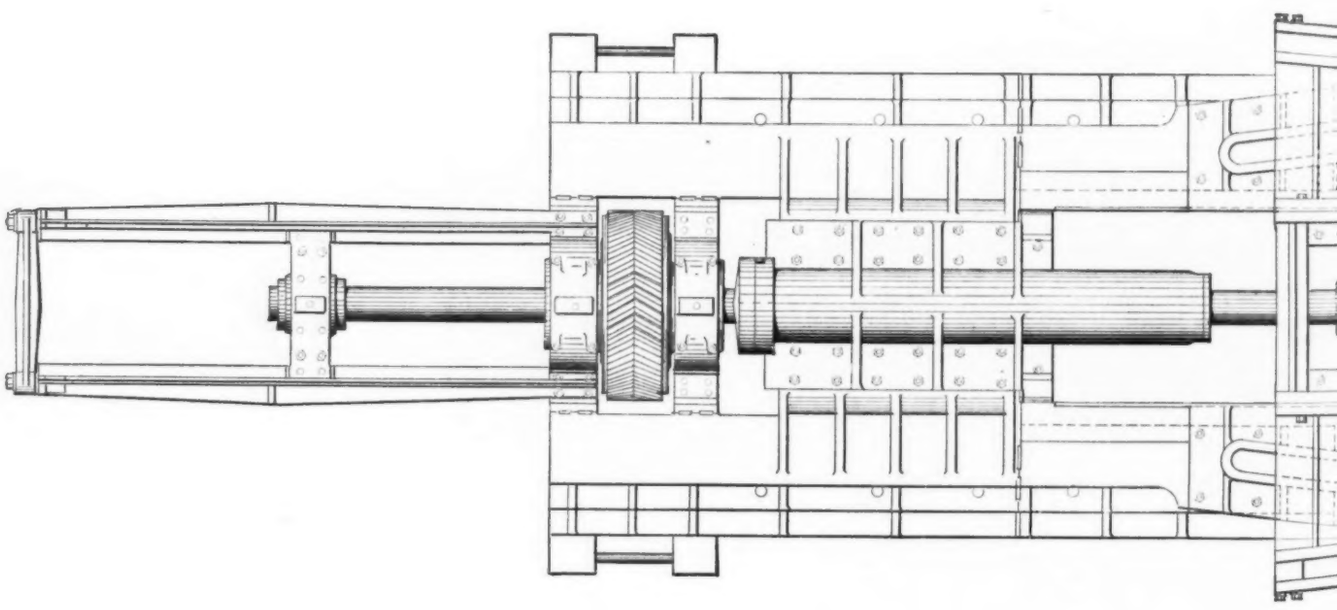
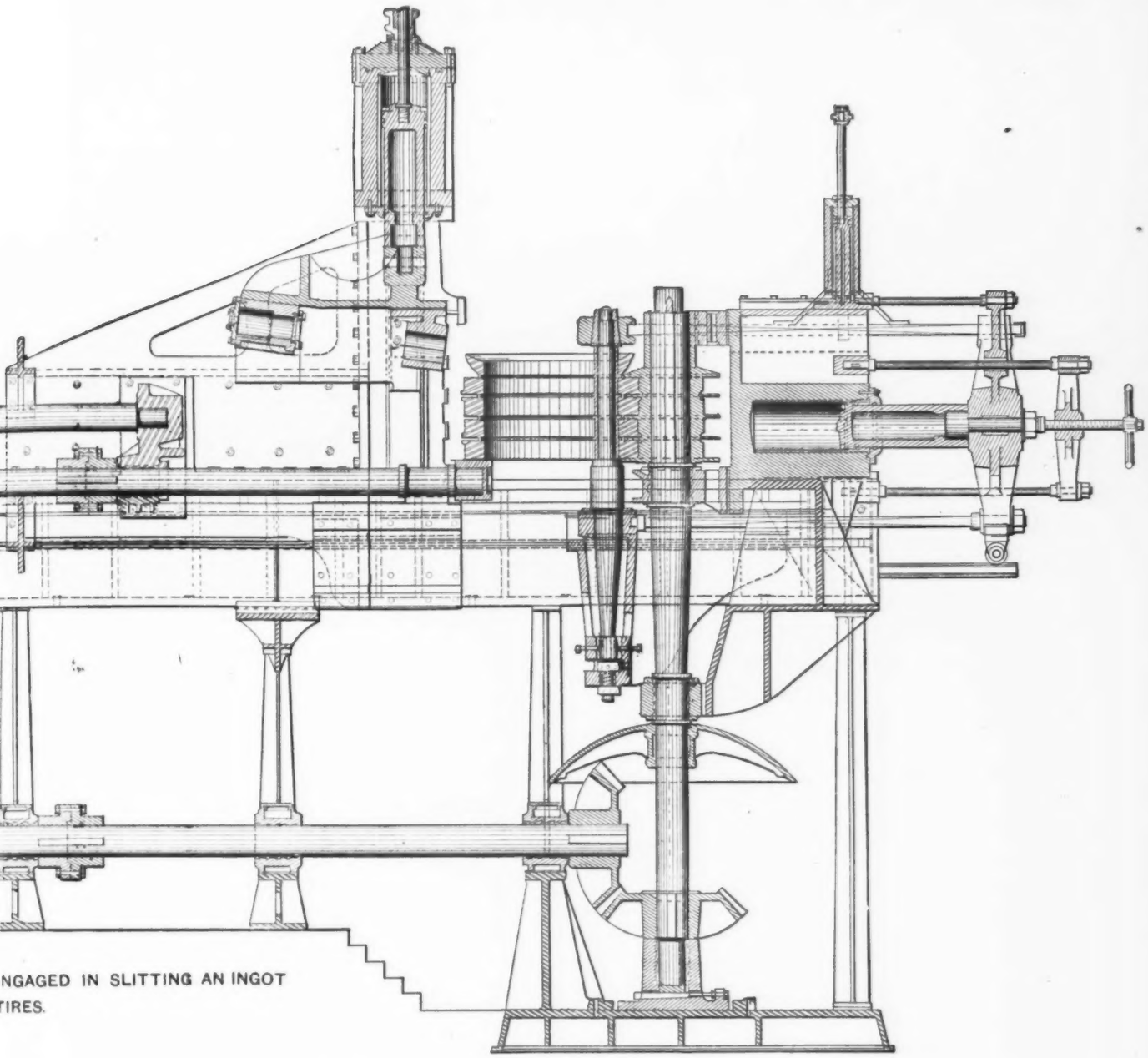




NGAGED IN SLITTING AN INGOT
TIRES.

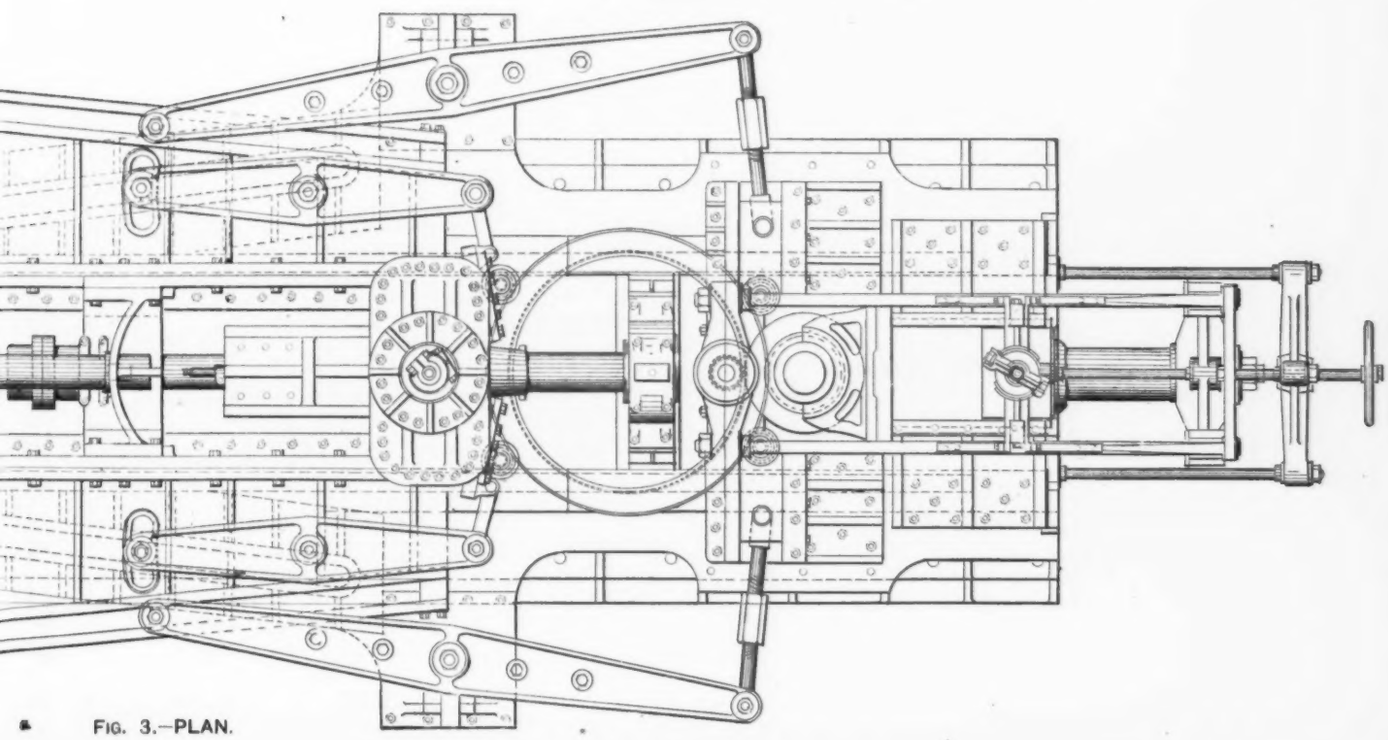


FIG. 3.—PLAN.

the resistance against the piston of the press, and this effect is obtained by regulating valves of different forms which allow of using the steam expansively. The doubt which was at first expressed that it would not be possible to work very exactly by a hydraulic piston driven by a steam multiplier has been dispelled by employing regulating valves in the water pipe. By them the velocity of the water and of the steam piston can be so regulated as to move the piston as smoothly as in any other press or shear. The system has further been applied by R. M. Daelen to cranes and hoists, but with lower water pressure. Then, too, it is very economical in installations where there are only so small a number of cranes to drive that it would be too dear to put in a steam pump and an accumulator.

The first design was that of Fig. 1, a vertical bloom shear for billets or blooms up to 6 inches square, flat bars and slabs, while Fig. 2 was designed for blooms up to 15 inches and more. There are now in Germany and Austria 27 shears of both designs in use, the weight of which varies between 20 and 100 tons.

The billet shear makes up to 24 blows per minute, and the largest bloom shear up to 12, while shears driven by a steam engine make only four to six per minute, and the movement of the knife is not dependent upon the will of the operator, as it is in handling the distribution of the intensifier. These large bloom shears have very powerful steam engines, which run at full speed all the time, cutting as well as returning. Steam of higher pressure is used in the single acting intensifier. There is a small cylinder upon or behind the shear, the piston of which is under steam pressure and draws the cutter up or back.

Twenty-four presses of different kinds and sizes are now at work for other purposes, among which is a 5000-ton press for bending armor plates. Nine presses of special design for stamping rolled railroad sleepers are working. The system has also been applied to forging presses up to 1200-ton pressure. The cranes and hoists have chiefly been employed in open hearth steel works, and there are now 10 executed by the Neusser Eisenwerk, Daelen & Seuff, Weerds, (Rhin).

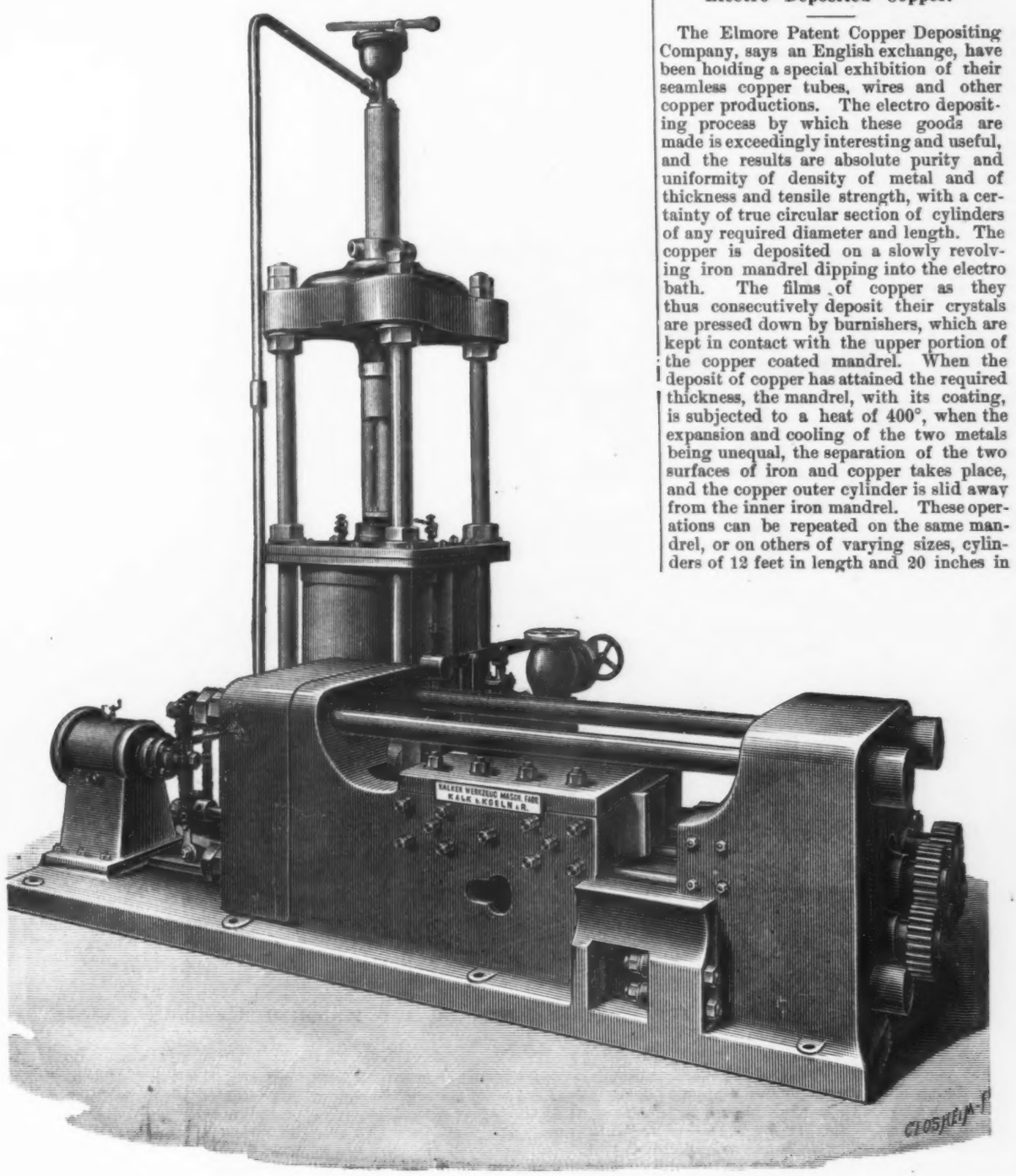


Fig. 2.—The Daelen Horizontal Bloom Shear, with Intensifier.

Electro Deposited Copper.

The Elmore Patent Copper Depositing Company, says an English exchange, have been holding a special exhibition of their seamless copper tubes, wires and other copper productions. The electro depositing process by which these goods are made is exceedingly interesting and useful, and the results are absolute purity and uniformity of density of metal and of thickness and tensile strength, with a certainty of true circular section of cylinders of any required diameter and length. The copper is deposited on a slowly revolving iron mandrel dipping into the electro bath. The films of copper as they thus consecutively deposit their crystals are pressed down by burnishers, which are kept in contact with the upper portion of the copper coated mandrel. When the deposit of copper has attained the required thickness, the mandrel, with its coating, is subjected to a heat of 400°, when the expansion and cooling of the two metals being unequal, the separation of the two surfaces of iron and copper takes place, and the copper outer cylinder is slid away from the inner iron mandrel. These operations can be repeated on the same mandrel, or on others of varying sizes, cylinders of 12 feet in length and 20 inches in diameter being among the specimens on view, and there is no reason why cylinders of larger, indeed any size, should not be made if required.

For wire the copper cylinder, formed as described, is cut into square-sectioned strips of any dimensions according to the thickness of the copper deposited. These strips are passed through two or three dies, which are ample for obtaining a round section for the wire, and which thus results without the hardening which occurs

through the repeated drawings which ordinary wire undergoes and which renders it brittle and necessitates the after process of annealing.

In the market the Elmore process has chiefly to contend with brazed tubes made from rolled copper. There is no question as to the superiority of seamless tubes, if the price of the latter be not in excess of the commercial price of the brazed tubes; and on this point the makers undertake to sell their goods at the same price as buyers are accustomed to buy the brazed goods for. For copper steam pipes for modern high pressure engines the value of seamless tubes is very great, as with the steam strain upon them the brazed goods are always liable to explosion, and in such cases it is nearly always that the burst takes place in the vicinity of the weld. The strength of a brazed cylinder or pipe is only on a par with its weakest part, and any overheating in the brazing operation may increase its brittleness locally to a very dangerous degree. In the electro deposited process there is a complete elimination of the detriment to be effected by heat, as no heat at all is employed except that harmless heating necessary for separating the copper cylinder from its mandrel, and which is far below an injurious temperature. In some tests conducted by Mr. W. Parker for the committee of Lloyd's Register, the electro-deposited Elmore metal stood a pressure of 3450 pounds per square inch before it burst. A solid drawn copper tube by a leading firm stood a pressure of of 2200 pounds. A third tube of brazed sheet copper burst at 2200 pounds near the line of brazing—always a weak place. The Elmore tube stretched and expanded uniformly until the copper was reduced from $\frac{3}{16}$ to $\frac{1}{16}$ inch.

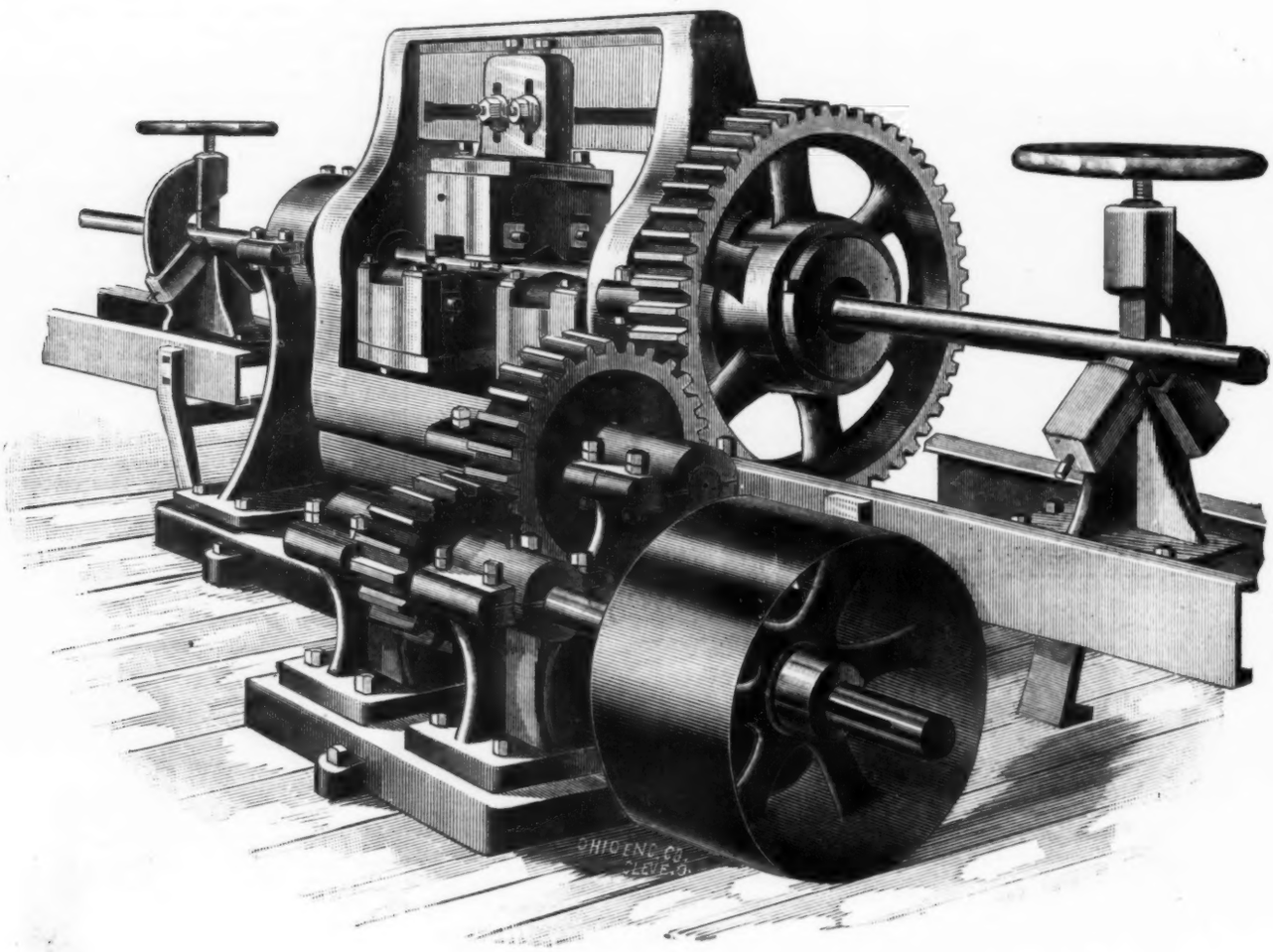
The solid drawn tube also expanded, but not in the same uniform way. The tenacity of these three descriptions of copper are given as $23\frac{3}{16}$, $20\frac{1}{2}$ and 14 tons per square inch. The superior ductility is also shown in the manner of breaking the contraction of area in the vicinity of the fracture, being 12.8 per cent. in the sheet copper, 45 per cent. in the drawn copper, while in the deposited copper it averages 73 per cent. The reports on the breaking stress show in many cases 60,000 pounds per square inch of section. For electrical purposes the Elmore copper is very efficient, affording a conductivity, as measured by the standard in use, as high as 104 per cent. Professor Kennedy, of University College, also gives his testimony as to several tests of sections of copper of about 0.165 square inch, of which the breaking load amounted to 26.83 tons. The tensile strength can, it is said, be raised for special purposes to 40 tons per inch.

Finally, we may remark that the natural process by which the copper is deposited frees the metal from all contaminations, and there is a certainty, therefore, of the absolute uniformity of the metal itself throughout the whole mass of copper deposited.

H. R. Durkee & Co., of Chicago, announce that they have sold out their commission pig iron business to A. H. Dunham and D. V. Keedy, who have been associated with them for a number of years, and who will continue to handle the well known brands of iron which this firm have represented. Messrs. Dunham and Keedy have associated themselves with Charles Himrod & Co., who are now able to offer to the trade, in addition to the irons handled by them, the brands recently represented by H. R. Durkee & Co. Their larger variety of both soft and strong irons will enable them, they believe, to fully meet the wants of consumers.

Shafting and Pipe Straightening Machine.

The machine here represented is intended principally for rolling mills, pipe works and establishments making a specialty of turning shafting. The advantages of such a machine, as compared with the old method of straightening under a press, are evident. The engraving shows the shaft held in position by the vises. The chilled rolls are attached to blocks held to the large center piece which is mounted on trunnions and revolved around the shaft by means of the gearing shown. The blocks carrying the rolls can be set at any desired angle and the bar fed through the machine automatically; they can also be adjusted to suit any size of shafting from 1 to $4\frac{1}{2}$ inches in diameter. The machine not only straightens the bar but leaves a fine finish on turned shafting, superior, it is stated, to that obtained by grinding. The machine has a capacity of from 20 to 30 tons of rough or finished shafting in 10 hours. The manufacturers are the Brightman Machine Company, of Cleveland, Ohio.



SHAFTING AND PIPE STRAIGHTENING AND FINISHING MACHINE

B. H. Clover, president of the Farmers' Alliance, went to Kansas 15 years ago almost penniless. Now he owns 1600 acres of fine land, 75 head of horses, 100 cattle and lots of farming machinery.

THE WEEK.

President Diaz, of Mexico, in his Message to Cougress on the 23d ult., says that the financial situation of the republic continues to improve. The receipts of the Treasury during the last fiscal year exceeded $36,000,000; the receipts from the frontier and maritime custom houses reaching $24,000,000. The custom houses now collect $9,000,000 more than they did four years ago.

Two "whale back" coal barges, 195 feet long, with double bottoms, are nearly finished at the yards of Handren & Robins, Erie Basin, Brooklyn, N. Y.

The new laboratory for Lehigh University, at South Bethlehem, Pa., will have no iron whatever in its construction, only wood and brass being used.

A census of the business firms of the Argentine Republic shows how far Americans are behind their European competitors in business enterprise in that country. The United States is represented by only 26 firms, with a total capital of $2,189,900, while Germany is represented by 402 firms, with a capital of $16,610,000; Great Britain, 257 firms, capital, $121,960,000; Italy, 7720 firms, capital, $150,580,000, and Spanish merchants by 2223 firms and $3,284,000 capital. Native firms number 1357, with a capital of $241,760,000.

Chicago has risen close to the second place in the United States in magnitude of bank clearings.

The British Consul at Canton says the project for establishing a great cotton factory at that port has been abandoned, and that the machinery has followed the late Viceroy to Hankow.

The elevated railway system in New York City is good paying property, despite the heavy damages awarded in the courts, practically in payment for the right of way. For the last fiscal year the Manhattan "L" paid $1,560,000 in dividends and has a surplus of nearly $2,000,000.

The exports of manganese ore from St. Jago de Cuba last month were 52,000 tons.

The "Hammer and the Plow" is adopted as an emblem by one of the political parties in Indiana.

The highest bridge in the country will be built by the Southern Pacific Railroad across the Pecos River, in Texas, to make a shorter route. The bridge will require two spans 380 feet in hight. In deserting the old route the Southern Pacific leaves to the action of wind and weather one of the finest bits of engineering in Europe and America. It comprises 12 bridges and two tunnels that henceforth will be of no use to anybody.

The contemplated "Science and Arts" building in Brooklyn will probably be erected in a commanding position near Prospect Park, and should be indestructible by fire.

The northern extension of the New York Museum of Art, in Central Park, for which $400,000 was appropriated, will soon be put under contract.

The Morocco Manufacturers' Association, of Lynn, Mass., are contending for the principle of free shops, and about 900 men are locked out. Some of the factories are like small garrisons, provided with cots, cooking apparatus, &c., to withstand a siege.

Louisiana will gather the largest sugar and rice crops since the war.

The Trades Union Congress, lately convened in Liverpool, while advocating various measures calculated to promote the interest of both workmen and employers, was to some extent carried away beyond the conservative councils which formerly prevailed. The latest accessions proved to be the most radical and aggressive. The Dockers' Union, for example, would decree that only unionists should be allowed to work, and they would make it compulsory on the part of municipal and county authorities to establish workhouses and factories where those who fail to obtain employment can find useful occupation. There is an acknowledged tendency to neutralize the many advantages which have resulted from making it legal for tradesmen to organize for their common benefit. On the whole, therefore, the proceedings of the 460 delegates representing nearly 1,500,000 unionists are construed in England as a signal of danger.

The increase of traffic over the Poughkeepsie Bridge is said to have been at the rate of 30 per cent. a month since the opening.

Russia has opened another important grain port on the Black Sea, after spending millions of roubles in tunneling through the neighboring mountains from the agricultural region.

Castle Garden will shortly be surrendered to the city by the old Emigration Commissioners. Eligible business property on the water front in that neighborhood is held at a higher valuation.

Over 60 corporations for the manufacture of the coarser grades of cotton goods are said to have been organized in the South during the past eight months.

An air brake instruction train is being run over the Pennsylvania system, that all train men may become familiar with the manner of operating the brake.

The transfer of Assistant Engineer J. R. Wilmer from duty at St. John's College, Annapolis, to the Mare's Island Navy Yard is looked upon as the beginning of the detachment of all engineer officers from instruction duty at scientific schools and colleges, made necessary by the increasing demand for engineers on board the new vessels.

Among the 43 sets of plans for improving the transportation facilities on the Brooklyn Bridge there are about 20 which the Board of Experts have found worthy of serious consideration. One having several new features is offered by Charles E. Emery, formerly one of the consulting engineers of the bridge, which embodies both the loop and tail-switching features, though the latter is not essential to it. It contemplates providing a loop at the New York terminus, and tail switching with a great many of the objections of the Barnes-Martin system elminated at the Brooklyn terminus.

Oil producers in Pennsylvania are combining to construct an independent pipe line from its oil fields to large refineries which it is proposed to erect on the banks of the Ohio River near Pittsburgh.

Secretary Rusk volunteers a number of suggestions respecting the World's Fair. The public, he says, are sated with ordinary exhibitions. Unlike international exhibitions in Europe, the attempts in this country have declined in quality ever since the initial effort at Philadelphia. The standard has deteriorated. "It should be an exhibition of ideas rather than of objects," the secretary says, "and nothing will be deemed worthy of admission to its halls which has not some living, inspiring thought behind it, and which is not capable of teaching some valuable lesson. The best talent of this country, and indeed of the world, should be employed to bring out and enforce the ideas. There should be effective systems of labelling and handbooks written in intelligible language and popular style. The introduction of these features will not in any sense interfere with the value of the exhibition to the producer and the manufacturer as a means of bringing their products to notice and finding new markets for them." It is also important that objects should be gathered showing why foreign nations should remove the barriers they now oppose to our meats and other food products.

Despite tariff obstructions Goldwin Smith and others in Canada are hopeful of finally bringing about commercial union. But Mr. Smith contends that there can be no reciprocity that excludes American manufactures.

Public Works Commissioner Gilroy, of New York, estimates that $3,357,000 will be required for his department during the ensuing year.

Riotous Chinamen have destroyed the railway embankment near the coal mines, stopping the operation of the road, the pretense being that it aggravated the damage by floods. Despite this event, despatches just received from China, via St. Petersburg, state that the whole length of the railway through Manchuria has been surveyed, and that English engineers are busy on the line, which is to be built with English money.

Measures before Congress permitting the construction of a tunnel between New Jersey and Staten Island, also a bridge from New York to the Jersey shore, are making favorable progress.

A report from Liverpool says the English Government has agreed to admit United States sheep free to all markets. Canadians are alarmed lest Yankee cattle also be admitted.

E. M. Walsh, of Honolulu, who is a sugar planter in Hawaii, says that nine-tenths of the capital in the islands was brought there by American citizens. The McKinley bill, in his opinion, will bankrupt many planters.

The entire dredging plant of the American contractors at Panama is being transferred to Greytown for use on the Nicaragua canal.

It is now said that the formation of the Southwestern Railway and Steamship Association is part of a plan of Mr. Gould's to establish a combined rail and water route, whereby the products of the sections of the country along the Southwestern roads can be conveyed to New York and the seaboard, and that four new and powerful steamers will be built for the coastwise route.

The International Navigation and Trading Company, with a capital of $1,000,000, have been organized for the purpose of bringing to this market coffee, sugar, mahogany, plants and tropical fruits. Under the same auspices a banking and trust company is to be formed to operate in Mexico, with agencies at all important points.

The Spanish Government has contracted with a firm at Bilboa for the construction of three first-class armored ships.

No boys under 16 years of age will hereafter be employed in the Edgar Thomson Steel Works or at the Homestead Steel Works, and about 350 are discharged under the order. Andrew Carnegie has always opposed young boy labor.

Including the vessels authorized by the present Congress there are 17 without names. These are the three 2000-ton cruisers, two 1050-ton gunboats, the practice vessel, the 5300-ton and the 8100-ton

protected cruisers building by contract, the two 3000-ton cruisers building in the navy yards, the three battle ships and the 7300-ton fast cruiser for which bids will be opened on October 1, the two torpedo boats and the Ammen ram, not yet advertised.

The Southern Pacific road has nearly completed the work of replacing its old wooden bridges with substantial iron structures.

The Buffalo Fire Department has lately received a novel fire engine which has excited much interest in that city. The carriage is constructed entirely of *papier mache*, all the different parts of the body, wheels, poles and the rest being finished in the best possible manner.

Details have been arranged with the Mexican Government for the $30,000,000 subvention loan just placed in Europe to the credit of the Mexican Central Railroad.

Commander Barber, U.S.N., has been granted a patent for a method of floating stranded vessels, by means of explosives which will produce a jar or concussion, and, at the same time, excavate the ground on which the vessel rests.

President Gompers, of the American Federation of Labor, denounces the socialistic trades unions known as the Central Labor Federation for their "dastardly work" in attempting to "undermine and disrupt" the trades union organizations. No love is lost between them. And he is equally severe upon the Knights.

The report is confirmed that Russia has contracted in France for 500,000 rifles.

The trustees of the Chesapeake and Ohio Canal Company desire to avert a sale of that property under foreclosure proceedings by the State of Maryland, and claim that if permitted to redeem the bonds they can make the canal a profitable means of transportation. They will be permitted.

A new distribution of wealth is taking place in Japan, as the result of introducing a new civilization. The Japan *Mail* says this change is seen in the concentration of wealth at business centers. At the same time capital and land alike are passing into the hands of a smaller number of individuals.

The canned fruit industry in California is said this year to yield a profit of 25 per cent. Its increase from year to year has been wonderful. The pack in 1890 will be 1,000,000 cases, worth probably $4,000,000.

Jay Gould has succeeded in forming his ideal railroad association. Its title is the Southwestern Railroad and Steamship Association, and it includes all lines south of Kansas City and west of the Missouri River.

The city of St. Louis, after keeping pace with Boston for twenty years, is now forging ahead and claims to possess many points of advantage, such as cheaper living and lower taxes. In accounting for its commercial strength a St. Louis correspondent says: "Its trade is derived from every adjoining State, 20 trunk lines centering in the city. Texas, now an empire, growing from nothing to2,500,000 souls; Arkansas rapidly increasing in population; Mexico making overtures to this community in a business way; Gould centering his roads here, and the many tributaries which take from and contribute trade to the city for hundreds of miles about, tend to make it expand, and will make St. Louis the true metropolis of the plains."

The River and Harbor bill, which President Harrison has signed, appropriates altogether $977,000 for the improvement of waterways in the immediate neighborhood of New York, as follows:

Improving channel at Gowanus Bay..	$60,000
Improving Bay Ridge Channel.....	100,000
Improving New York Harbor	160,000
Between Staten Island and New Jersey	22,000
Hudson River.....	150,000
Newtown Creek and Bay.....	35,000
East Eiver and Hell Gate.....	200,000
Harlem River.....	250,000
Total.....	$977,000

The Secretary of War is also directed to make examinations and surveys with a view to straightening Buttermilk Channel so that it and Gowanus Channel will have a uniform depth of 26 feet at mean low water, and with a view of giving Bay Ridge Channel a uniform depth of 23 feet.

During the past week 3000 Russian emigrants arrived at Bremen to take steamers for South America.

The Envelope Trust is said to have disintegrated.

MANUFACTURING.

Iron and Steel.

Cartwright, McCurdy & Co., proprietors of the Enterprise Iron Works, at Youngstown, Ohio, have plans drawn up for the erection of a puddle mill to be built adjacent to their present plant. It will cost about $50,000, and will consist of a three high muck mill and 20 puddling furnaces. It will give employment to about 100 men.

Carnegie, Phipps & Co., Limited, of Pittsburgh, have received a letter from Secretary Tracy, requesting them to send a representative to the conference to be held between the Steel Board and steel manufacturers in Washington on the 8th inst.

The business community of Pittsburgh was startled last week by the announcement that C. J. Schultz, proprietor of the Iron City Bridge Works, in that city, had confessed judgment in the sum of $183,321 to the Oliver Iron and Steel Company, and that an execution for that amount had been issued. This judgment was given to secure payment of a number of notes for various amounts running to September 19, 1890, and January 11, 1891, inclusive. Execution attachments were issued directed to the American Bridge Mfg. Association, Ohio Connecting Railroad Company, Union Storage Company, Pittsburgh and Western Railroad Company, Baltimore and Ohio Railroad Company, W. T. Lindner, Pleasant Valley Railway Company, Swan & McAfee, the Howard Plate Glass Company, Pennsylvania Company and others as garnishees. Carnegie, Phipps & Co., Limited, of Pittsburgh, have also obtained an attachment in the Supreme Court of New York against the firm. The concern was one of the oldest in its line of business in the country and had a very large trade. It is impossible as yet to state what arrangements will be made until a meeting of the creditors has been held. It is intimated that Mr. Schultz will ask for an extension.

A part of the Vulcan Iron Works now located at No. 86 North Clinton street, Chicago, is to be moved further from the city. A site has been purchased near the corner of Leavitt and Kinzie streets, on the Chicago and Northwestern Railroad. W. H. Warrington, the president of the company, says the main works will remain as located at present, and that the new site has been purchased to make room for proposed extensions. The foundry will be moved from its present location and the shops on Clinton street extended. The company employ about 200 men, but will double the force when the change is made. They make a specialty of the manufacture of excavating machinery.

The Bethlehem Iron Company have called a meeting of the stockholders to consider the matter of increasing the capital stock from $3,000,000 to $5,000,000. This proposed increase is to be spent in additions to the works, which include the new ordnance works, where armor and guns are turned out for the Government.

The Youngstown and Pittsburgh capitalists who owned stock in the Lancaster Iron Company, of Lancaster, Ohio, have disposed of it to the Lancaster parties, who now have entire possession of the plant.

The Custer Rolling Mill Company has passed into the hands of the Wellman Iron and Steel Company, with its capital increased to $1,000,000.

In answer to the report that the United States Iron and Tin Plate Company, Limited, of Apollo, Pa., were about to return to the use of coal, we have received the following advices from the company under recent date: "Our contract has not yet expired and will run for several months yet, and while we may not be able to make another contract with the National Transportation Company, we feel confident that we can make some arrangement which will enable us to continue using natural gas as our fuel."

The Sharon Steel Casting Company, of Sharon, Pa., are making a number of extensive improvements that will more than double the present capacity of their plant. A new molding room 100 x 100 feet is being added, which will give employment to about 20 additional molders. The company make a general line of steel castings in any size from 1 pound up to 15 tons. At present they are giving employment to about 200 men. Daniel Eagan, president of the company, was in Pittsburgh recently and made large purchases of machinery for the additions that are being made to the plant.

Some time ago the men in the employ of the Pennsylvania Construction Company, at Uniontown, Pa., made a demand that their working hours be reduced from ten to nine, without any reduction in wages. The firm refused to grant the demand at present, but agreed to do so on April 1, 1891. The men accepted this proposition and have returned to work.

Several of the regenerative gas furnaces now being erected at the plant of the Pennsylvania Tube Works, at Pittsburgh, by the S. A. Smythe & Laughlin Company, of that city, have been completed. Work is being pushed rapidly on the rest, and they will probably be completed by December 1 next. This firm have decided to abandon the use of natural gas as a fuel.

Last week the Pittsburgh Steel Casting Company, of Pittsburgh, turned out one of the largest Bessemer steel castings ever cast in this country. It was a main shaft for the Riverside Iron Works, of Wheeling, W. Va., and weighed in the rough 21,000 pounds.

The new blast furnace built by the Hecla Iron and Mining Company, at Ironton, Ohio, and which was leased by Geo. N. Gray & Co., is now turning out 24 tons per day of warm blast iron for car wheel and machinery uses. The company is composed of George N. Gray and the Hecla Iron and Mining Company, each owning a half interest.

We understand that negotiations for the establishment of a first-class rolling mill at Shendun, Va., are under way.

The charter of the new Lynchburg Iron Company, of Lynchburg, Pa., provides that the capital stock of the company shall be not less than $110,000 nor more than $200,000. The president of the company is E. Burd Grubb, of Edgewater Park, N. J.

The contract for the steel plant, in Ashland, Ky., has been awarded to McIntosh, Hemphill & Co., of Pittsburgh. Work on the plant is to be commenced at once and completed by July next. In addition to the buildings necessary for the works proper, there will be a wharf boat and incline, a large depot and other buildings. The plans are so arranged as to admit of any addition that may be required.

Mr. Gayley, furnace manager of the Edgar Thomson Steel Works, has been in Shendun, Va., looking into the advantages offered at that place for the establishment of an open-hearth basic steel plant.

Machinery.

The Leechburg Foundry and Machine Company, of Leechburg, Pa., have made a satisfactory settlement with their machinists and the entire plant of the firm is being operated to its utmost capacity. The firm have some large orders on hand which will keep them busy for some time to come.

The Fort Scott Foundry and Machine Company, Fort Scott, Kan., are at present working full time in all departments. Their specialties are sugar making and mining machinery. They have nearly ready to ship a sugar evaporating plant with a capacity of 150,000 tks. per day for Dr. Serafin Mederos, of Matanzas, Cuba. This will be one of the largest evaporating machines on the island. They have recently shipped a machine for washing coal for coke making to Piedras Negras, Mexico. Among other recent orders is one for a lead ore concentrator to go to Mattawa, Ont., which is a duplicate of a former order, also a lead ore concentrator for La Cerillos, New Mexico.

H. K. Porter & Co., of Pittsburgh, builders of light locomotives, have made an unsolicited reduction in the working hours of their employees. The following notice has been posted in the shops of the firm: "On and after Oc-

tober 20, 1890, up to April 4, 1891, these shops will be run nine hours daily. This date, October 20, enables us to carry out our contracts. The number of hours after April 4 will be arranged to the satisfaction of all concerned, but may depend upon the contracts we find possible to secure with this reduction in time. Each man's pay from October 20 will be adjusted at an hourly rate to be given him on pay day, October 21, practically to equal for nine hours the amount he is now receiving for ten hours. On October 21 all day men then in our employ will receive in addition to regular pay a special additional amount equivalent to 10 per cent. on their wages from September 8 to October 18 inclusive." The men have received this announcement with great satisfaction.

The Graham Land and Improvement Company have, it is stated, closed a contract with the C. P. McWane Plow and Foundry Company, of Wytheville, Va., for the removal of their iron foundry and plow works to Graham, Va.

The Cleveland Twist Drill Company, of Cleveland, Ohio, state that their orders during the summer months were considerably in excess of their capacity. They have just increased their turning capacity 75 per cent., and have also made large additions in other departments, by which they expect to be able to fill orders more promptly in the future.

The Lloyd-Booth Company, proprietors of the Falcon Foundry and Machine Works, at Youngstown, Ohio, have the contract to make the roll trains for the new puddle mill to be built by Cartright, McCurdy & Co., in that city. They have also received a large order for machinery from the Shenandoah Furnace Company, of Milnes, Va.

G. A. Crosby & Co., of Chicago, manufacturers of sheet metal machinery, have just completed an order for several carloads of presses, dies and other can making machinery for a new plant in South America. The order was received through their Berlin agency. Other export orders of considerable importance have been booked within the last few weeks. The firm's domestic business is large and constantly growing.

Gould & Eberhardt, of Newark, N. J., report the present demand for the Eberhardt patent shapers, drill and tapping machines and entirely automatic gear cutter good, and have recently booked orders for the latter machines to Westinghouse Electric Company, Prentiss Bros., F. E. Reed and a carload is ready for the McGill University, in Canada, besides a number of foreign shipments.

The Ætna Machine Company, Warren, Ohio, have just closed a contract with the Oliver Iron and Steel Company, Pittsburgh, Pa., for an engine to drive the machinery in the new plant they are now building in that city.

The New England Butt Company, Providence, R. I., besides manufacturing cast butt hinges and house furnishing goods, are also putting on the market braiding machinery for silk, cotton and worsted braid, also for covering electric light wire, single, double and triple winders, single and double cable braiders, cabling machines, polishing machines, taping machines, stranding machines, measuring machines and other special machinery for electrical purposes.

William Tod & Co., of Youngstown, Ohio, will furnish the engine for the puddle mill to be erected by Cartwright, McCurdy & Co., in that city. The above named firm have received a contract from the Shenandoah Furnace Company, of Milnes, Va., for three large engines which will cost about $12,000.

The Jeffrey Mfg. Company, of Columbus, Ohio, manufacturers of rollers and detachable chain belting, have recently filled several large orders for conveyors for foreign shipments, while their order book shows a large number of orders for shipments to different parts of this country.

The machine shop of R. A. Cook, at Stevens Point, Wis., was destroyed by fire September 25. The building and patterns are a total loss, while the machinery is partially so. The origin of the fire is a mystery. The loss is from $8000 to $10,000, with an insurance of $8000. The shop will be rebuilt.

Hardware.

It is announced that Knapp & Pratt, Geneva, Ohio, have purchased the entire plant, tools and stock of the Enterprise Mfg. Company, of that place, and intend to continue the manufacture of the most saleable goods, adding such others from time to time as may seem desirable. Mr. Knapp, who has been connected with this line of trade, and was identified with the Enterprise Mfg. Company for a number of years, will have charge of the buying and selling. Some finished stock of the old firm is still on hand and will be closed out at a low price.

Perkins Brothers, Bridgewater, Mass., have recently built and started a wire mill, its present capacity being 100 tons per month. They have added to their nail plant several machines. They are also building wire and wire nail machinery for the market. They are very busy in all departments, especially so on their improved finish nails, for which they report a ready demand.

The Buffalo Wire Company, Buffalo, N. Y., manufacturers of Hathaway's Patent Fence Wire, report that though their factory only commenced operation in July, they have been obliged to work nights in their endeavor to keep up with their orders. The fence wire is meeting with a cordial reception where it has been introduced.

Anthony Wayne Mfg. Co., Fort Wayne, Ind., under date of September 25, write that business is exceedingly good. "We are running our factory 11 hours daily, and are just able to supply the demand. Our sales within the last three months have almost doubled for the same period last year. We are contemplating putting in an electric light plant, so as to enable us to run at least 10 hours all through the winter months."

Holmes, Booth & Haydens, Waterbury, Conn., are adding to their plant a building, 100 x 150 feet, to be used for rolling copper from the bar into rods and sheets. This building will also be equipped with wire machinery for producing copper wire for electrical purposes. Their old wire mill building has recently been enlarged and additional wire machinery placed in it. In the early part of the present year they erected a large building designed for the manufacture of seamless brass and copper tubing, and are now running the machinery and producing large quantities of tubing, of which they are prepared to furnish extra large as well as the regular sizes.

The Ashley Wire Company, of Joliet, Ill., are putting in the foundations for a main building 195 x 278 feet in size, to be built of stone, brick and iron, and a warehouse 100 x 100 feet. It is expected that the mill will be in operation by November 1.

Miscellaneous.

The Warwick Iron Company, of Pottstown, Pa., have sold their lease of the Bittenbender Iron Mine, at Siesholtzville, Berks County, to Dr. H. K. Hartzell, of Allentown, together with all the machinery of the same, on private terms. This mine has been leased by the Warwick Company since 1872, and probably 200,000 to 300,000 tons of a fine quality of magnetic ore have been taken therefrom to supply the furnace at Pottstown. The transfer took place on October 1. Dr. Hartzell was connected with Thomas A. Edison, the inventor, in the works of the New Jersey Concentrating Company, near Bechtelsville, Berks County, where experiments were made for some time in separating ore by the Edison electric process and machinery.

The Carroll-Porter Boiler and Tank Company have recently received a contract for the Iroquois Furnace, of South Chicago, Ill., which is to be one of the latest and most improved designs. They have also been awarded the contract for stand pipe and other improvements of the Pennsylvania Steel Company, of Steelton, Pa.

Reese, Hammond & Co., of Bolivar, Pa., manufacturers of fire brick, have secured the contract for part of the brick for hot blast stoves to be erected by William M. Kaufman & Co., of Sheridan, Lebanon County, Pa. They have orders enough ahead to keep their works running full until the close of the year, and report the most prosperous year in the history of their business. In the month of August they shipped 540,000 fire brick, and September will reach almost half a million. In four months they have shipped 2,000,000.

PROVIDENCE MISCELLANY.

Brown & Sharpe have recently presented the mechanical department of the Brown University with a valuable set of tools for use at Wilson Hall. These comprise a universal milling machine, grinding machine and a lathe, and their uses are many and varied. The No. 1 universal milling machine is designed to perform a large number of the various operations required in the manufacture of tools. It is especially adapted for fluting or grooving taps and reamers, making twist drills and many other tools without the use of a single attachment. The grinding machine is adapted for finer work in polishing metallic surfaces than the lathe. This machine has the capacity of plane, angular or side grinding and also the grinding of reamers and milling cutters, taper cutters and side teeth. The gift will make a very handsome addition to the other apparatus and machinery in the physical and industrial laboratory.

During the past week senseless rumors have been in circulation to the effect that an English syndicate was in this city endeavoring to purchase the plants of the Rhode Island Horseshoe Company's works, Nicholson File Works, Rhode Island Locomotive Works, Fletcher Mills, B. B. & R. Knight's mills, Gorham Mfg. Company, and several other large industries. An owner of one of these concerns was asked about the repeated reports of sale of these works to such a syndicate. He said: "I know that the transfer of such a large industry as either of those mentioned would be a matter of great interest to the commercial community, especially to the laboring element, and I would not withhold information so important if I had it to give, but I have no such information. There have been several, in fact, a series, of misrepresentations made concerning these works. But the whole amount of the whole matter is, this syndicate business is all a delusion. People are being made to believe that British capitalists are prowling around, ready to grasp every industry in the country. The fact is that these industries are being pestered by brokers who want to sell property. A broker sees a piece of property and he asks what it could be bought for, then he asks for an option of three months, say, and if he can get a capitalist—English, French or Chinese—to buy at a price which will leave a good profit for the broker, he buys where he got the option, and immediately sells. Brokers have been in this city inquiring about every piece of valuable property, and who can help that? Nobody can help it. There you have everything. It tells the whole story. The sale of one of these concerns could not be kept secret even if secrecy was wished. It would be on the market, and what is on the market the world knows."

The revaluation of the real and personal estates in this city has just been completed by the Board of Assessors, from which it is found that the total valuation of real and personal estate is $140,617,060, with a ratio of $15 per thousand. Following is a list of persons, corporations and estates interested in iron circles that are taxed for $50,000 and upwards:

American Electrical Works	$54,780
American Screw Company	1,059,060
American Ship Windlass Company	73,820
Armington & Sims Engine Company	105,200
Amos C. Barstow	534,080
Barstow Stove Company	94,960
Boston and Providence Railroad Company, Cove Station	385,440
Boston and Providence Railroad Company, India Point Station	141,580
Brown & Sharpe Mfg. Company	417,080
Builders' Iron Foundry	157,940
City Machine Company	59,960
Corliss, George H., heirs	177,200
Corliss, Emily A. and Maria L.	72,380
Corliss Steam Engine Company	397,520
Corliss, George H., Emily A., administratrix	100,000
Franklin Foundry and Machine Company	121,000
Fuller, Frederick	184,640
Harris, Wm. A., Steam Engine Company	107,500
Heaton Button Fastener Company	56,060
Hill, Thomas J.	263,640
Household Sewing Machine Company	252,460
Narragansett Electric Lighting Company	107,680
New England Butt Company	110,700
New York and New England Railroad Company	165,720
New York, Providence and Boston Railroad Company	528,020
Nicholson File Company	266,960
Old Colony Railroad Company	84,440
Phenix Iron Foundry Company	156,920
Providence Cable Tramway Company	97,760
Providence Machine Company	167,080
Providence Steam Engine Company	122,360
Providence and Stonington Steamship Company	115,800
Providence and Worcester Railroad Company	619,680
Rhode Island Locomotive Works	365,120
Rhode Island Tool Company	151,720
Union Oil Company	118,860
Union Railroad Company	404,460

In order to arrive at a more satisfactory standard in the tests of steel used in building the hulls and machinery of naval vessels, the Navy Department has invited representatives of steel making and shipbuilding firms to meet representatives of the Department October 7 next. The object of the conference is to discuss the various difficulties that have arisen under the present systems of tests and inspection, and to suggest such tests, subject to the department's approval, as will lessen these difficulties and avoid delay in the delivery of material.

The Iron Age

New York, Thursday, October 2, 1890.

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JOHN S. KING, - - - - BUSINESS MANAGER.

The West and the South.

Our visitors will in a few days take their departure from this city for the purpose of inspecting Western and Southern iron and steel industries. Their course will very appropriately lie through the heart of Pennsylvania, and they will be able to see for themselves the nature of the State which has so long maintained supremacy in the American iron trade. As they travel toward the West they will pass through towns and cities in that State whose names must be familiar to them in connection with the manufacture of iron and steel. When they arrive at Pittsburgh they will be on the threshold of what is commonly termed the West. Pittsburgh has so long been famous as the leading American city in the production of iron and steel that they will be in a measure prepared to properly appreciate its magnificent industrial development. For scores of years the name of Pittsburgh has been inseparably connected with almost everything of progress in nearly every branch of the American iron trade. The visitors will therefore naturally expect to see a stupendous aggregation of iron and steel works at Pittsburgh, and they will not be disappointed in any respect. But when they proceed further on their journey they will pass to districts whose interest in the iron trade is of comparatively recent origin and whose rapid development in the face of competition from older manufacturing sections cannot fail to excite their admiration.

The West and the South will vie with each other in endeavoring to secure most credit for rapid advancement. The West will point to its Cincinnati, Cleveland, Detroit, Chicago, Milwaukee and St. Louis, with a host of smaller cities, such as Youngstown, Ironton, Zanesville, New Albany, Terre Haute, Springfield, Joliet, Marquette, Ashland, West Superior and Duluth. The manufacture of iron and steel has penetrated to the recesses of the Rocky Mountains, and Pueblo in Colorado will claim distinction for the share which it contributes to the bright record of American manufacturing progress. In the chronology of the American iron trade Pennsylvania is hoary with age. Pittsburgh is an ancient of days, but the West is in its comparative youth. The development of the iron and steel industries of Chicago is a part of the country's recent history. It is only within the past decade that Western markets have fairly passed under the control of Western producers. This important section of the country, not long since almost wholly given over to agriculture, and therefore peopled but sparsely, is now dotted with manufacturing towns whose establishments obtain their supplies of iron and steel almost wholly from Western sources. The small towns of 1880 have developed into the cities of 1890, and almost every Western hamlet is now fired with the ambition to secure the beginning of a manufacturing industry to stimulate its growth.

Although the progress of the West has been rapid, and the pride of Western people is well-founded, the South has undergone a much greater transformation within a very recent period. It can point to no city with as great manufacturing interests as Chicago, but its Birmingham is a marvel, considering its extreme youth. Anniston, Chattanooga, Sheffield, Bessemer, Decatur, Florence, South Pittsburg, Nashville, Louisville, Middlesborough, Knoxville, Lynchburg, Roanoke, Fort Payne, and a host of other places which might be named, have developed such vigor in the prosecution of iron and steel enterprises that the whole aspect of affairs in the Southland has been changed within the past decade. A race of planters has suddenly been transformed into a community of manufacturers. A wealth of resources, surer in its returns than cotton and tobacco crops, has been opened up in Southern mountains, and the nation has had its supply of iron greatly augmented at a most opportune time. Our visitors will be asked to bear in mind when they reach the South that they will see practically a new country, which has doubled its production of pig iron since 1886, and is building new blast furnaces with such rapidity that it would not be surprising to see the production again doubled within the coming five years. The problem of manufacturing steel from phosphoric Southern ores appears to be approaching solution, and a new path has been opened for Southern iron producers which promises most important results. The visit of our Transatlantic friends to the South occurs at a most opportune time to appreciate the remarkable industrial development of that section.

In comparisons which may be made between the West and the South our visitors must not lose sight of the advantages possessed by the former in the magnificent deposits of rich and pure ores in the Lake Superior region. These deposits will be inspected by some of them, but not all will have the opportunity to do so in the brief time which they propose to spend in this country. Those who go South will undoubtedly be impressed by the natural advantages derived from the contiguity of fuel and ore deposits. Both sections have a sound basis for the perpetuity of trade, and both of them will undoubtedly show wonderful progress in the years to come.

The daily newspapers are more enterprising than exact in furnishing business information to their readers. For instance, in several of the most prominent Western journals the following statement appeared last week as a news paragraph: "Pig iron warrants have advanced sharply in England, but pig shows little change in this country at $18 to $18.50 for Bessemer, $17.50 to $18 for Northern foundry and $17 to $17.50 for Southern. Steel rails are quiet at $30 to $31, at the mill." The information was probably received from the Associated Press agent in New York, and was intended to show the condition of trade in Eastern markets. Appearing in Western journals as it does, without special connection with any section, it would seem to apply to Western markets, which is not the case. Western prices differ radically from these, as will be seen by reference to our trade report. In publishing such erroneous quotations the daily papers do considerable harm, especially when they publish lower prices than those actually prevailing, because certain classes of buyers will insist that such prices must have been made or they would not have found their way into print.

The German Iron Trade.

A review of the German iron and steel trade appears in a recent issue of the London *Economist*, in which the writer would appear to take anything but a hopeful view of the future prospects of the industry in the Empire. The enormous increase in the output for nearly every form of iron and steel during the past ten years, it is argued, represents unnatural growth, due in a great measure to the stimulus of Government patronage, more particularly in the last five years. Emphasis is laid upon the fact that importations of ores and pig iron have steadily increased, whereas the exports have fallen off. Data showing a considerable accumulation of supplies of pig iron within the twelve months are also brought forward as significant, and from all the facts presented the deduction is drawn that matters have reached the point where Government patronage can no longer be relied upon to sustain values. In point of fact, the *Economist* seems to be confident that even the system of manufacturers' conventions now in vogue will be unable to resist the natural workings of the law of supply and demand, although receiving the support of Government patronage. Whatever the facts in this connection may be, the statistics of the German iron and steel trade are interesting. They reveal an increase since 1884 of 1,660,000 tons in the production, and about 200,000 in the importation of ores; 730,000 tons increase in the output of pig iron and 100,000 tons importations of pig iron and scrap iron. Half manufactures of pig iron show a gain of nearly 1,100,000 tons; iron and steel half manufactures, 460,000 tons; commercial iron and steel, 310,000 tons; railway material, 69,000 tons, and smaller productions more or less gain. The grand total of all iron and steel manufactures is represented as having increased from 2,097,400 tons in 1878 to 4,345,300 tons in 1889. The export movement, on the other hand, has not held its own. In 1885 the shipments to foreign countries were

1,049,000 tons. There was an increase to 1,260,000 tons in 1887, followed by a falling off to 1,014,200 tons in 1889. Importations of crude material during the first half of 1890 are shown to have been double those of the corresponding period last year. Supplies of pig iron at works, according to official data, increased over 75 per cent. during the year ending July 30. The entire quantity on hand amounted to only 127,093 tons, however, or less than two weeks' production. This return, if correct, would suggest that possibly the *Economist* may have been rather too hasty in predicting calamity in the German iron trade.

The Pig Lead Situation.

The steady advance in the price of pig lead to a point that opens this market to foreign sources of supply brings about a condition of affairs that contrasts strongly with the experience of the past. Under the influence of the ruling of the Treasury Department, restricting the importation of Mexican silver lead ores, the production of pig lead in this country has gradually diminished, the falling off for the current year being estimated at probably 15,000 tons. Under the provisions of the McKinley Tariff bill it is believed a further curtailment of outside supplies will be effected. In any event it is the fact that supplies of pig lead in the West and in this quarter have fallen off to unprecedentedly small proportions, the market value of the metal meanwhile gradually advancing. At the present time carload lots are selling at 5¼ to 5.30 cents per pound in this market and 5.15 cents in St. Louis. This rise has opened up our markets to the Europeans, who, with soft Spanish lead selling at £13. 15/ in London, have placed upward of 1500 tons at a cost of 5.20 to 5¼ cents, laid down here, for delivery in November and December. These purchases, however, have caused an advance to £14. 7/6 in London, and that market appears, by latest advices, to be in a stronger position now than for some time past. Whether the foreign or the home markets will govern values in the near future is a matter of no little interest, and one upon which opinions differ widely. In the present state of affairs Europe is practically the key to the situation, as there is little doubt that the current American production is inadequate to supply the demand, while the producers, having thus a decided advantage, would naturally go as far as the European market would permit in exacting the highest possible prices. It would be in the natural order of things that home production becomes heavier under the stimulus of high prices, but until an increase does take place the foreign markets are likely to govern prices here in a great measure.

Reports are current that the railroad companies are again indulging in the reprehensible practice of false billing, in order to influence heavy shippers. The evidence thus far secured relates to the grain traffic, but the practice will hardly be confined to that branch of business if it is permitted to continue. The ingenuity of the method said to be in vogue is worthy of description. To employ it successfully the freight must be carried over two or more connecting lines. The consignees give explicit instructions to shippers to bill freight, not to the actual destination, but to a point which takes an arbitrary rate above the regular through rate. The road receiving the freight gets no benefit from the arbitrary rate, and therefore deducts it from the through rate before prorating, receiving for its share under such circumstances something less than if there had been a straight through rate. The road receiving the freight, instead of delivering it to the point to which it was billed, rebills it to its proper destination, according to instructions from the consignee. The arbitrary disappears from sight, as it was merely a gentle fiction to deceive the initial road. It is claimed that the amount thus secured at the expense of the railroad first receiving the freight, and which is given to the consignee, may run from 3 cents per 100 pounds to considerably more than that. The circumstance connecting the consignee with this irregular proceeding is in every case his instructing shippers which route should be preferred and giving them names of places to which shipments are to be billed. He would hardly go to this trouble if there was no special benefit to be gained. The practice revives the old system of rebates. Measures are to be undertaken to check it.

The Western Bar Iron Trade.

A somewhat unusual feature of the Western iron trade is the very heavy demand for muck bar now prevailing. Puddling furnaces are again in favor, as the price of muck bar is rising, while pig iron has been drooping. In quite a number of instances rolling mills are enlarging the capacity of their puddling departments to meet the requirements of their finishing mills. The Southern rolling mills with large puddling capacity are now reaping substantial benefit from their investments in a direction which it was thought might prove unwise in view of the increasing use of steel. Northern mills have found the Southern supply of muck bar very desirable in the present condition of trade. This demand for muck bar does not arise from any reaction against the use of steel, but is clearly caused by the growth of the consumption of bar iron in directions in which iron has continued to be preferred to steel. It is an evidence of the prosperous condition of trade, inasmuch as the merchant steel mills are all busily occupied in caring for the business offering to them. Leading manufacturers of bar iron state that they have seldom experienced such a state of affairs as now exists. Usually they have to spur their customers from time to time to send in specifications on contracts in order to keep their mills running regularly, and to guard against suddenly running out of work. They are at present receiving specifications with uncomfortable rapidity in numerous instances.

A peculiar feature of the muck bar trade recently has been the appearance of inquiries from rolling mills having no puddling furnaces, but built to use scrap. This is owing to two causes. One is the increasing preference shown by some classes of consumers for bar iron made wholly from new iron, and the other is the relatively high price of scrap as compared with pig iron. Old rails are very dear at present and show no signs of receding in value, as the supply coming forward is limited. Ordinary mill scrap has been much less abundant than usual the past summer in the West. The erection of puddle mills is thus being forced on mill owners who would prefer to depend upon scrap for their raw material. They will then be in a position to use whichever class of material is temporarily the cheaper.

The Nickel Supply Scare.

There is something surprising in the passage of the resolution to authorize the purchase of nickel ore and nickel matte to the value of $1,000,000, at the discretion of the Secretary of the Navy. This nickel is to be used in the manufacture of nickel steel for armor. Somebody has evidently frightened the authorities into the belief that unless our Government promptly jumps into the market, the supply of that metal will not suffice to impart to our armor steel the qualities which are claimed for the addition of a small quantity of nickel. Those who are connected with the greatest nickel producer in the world, the Canadian Copper Company, could certainly not have been the alarmists, since they are on record as to their capacity to supply at a profit the world's requirements at 25 cents a pound. Confessedly their chief concern has been to extend the market. The excellent results obtained with the alloy in armor plate must be very gratifying to them, but as a matter of tonnage the whole armor plate business is very trifling indeed. Even now it is a question whether the nickel steel is worth the additional cost, plus the royalty of 2 cents per pound. To the nickel producer the results are chiefly of greatest importance as opening up the prospect that nickel steel may be used for commercial purposes. Possibly representations have been made to the Secretary that the rush for nickel steel for those purposes will endanger the supply for the Government. If that is the case the Secretary will not be called upon to exercise his discretionary powers of purchase at once. He may rest assured that boiler and ship plate consumers will require a great deal more evidence as to the value of the alloy before they use it to any extent. It is true that James Riley, of the Steel Company of Scotland, one of the foremost authorities, has published an excellent paper on the subject. Still, the process of education is a slow one.

If the Sudbury deposits at all approach the magnitude claimed for them, and we

accept the authority of such men as Dr. Peters without a question, then production of the metal can readily keep pace with the supply. It seems to us that the scare has in it the elements of the ludicrous. Even if nickel were worth a dollar a pound, which it is not now, 1,000,000 pounds would suffice for 12,000 to 15,000 tons of armor, the nickel steel used carrying about 3½ to 4 per cent. Now, such a tonnage of armor plate will not be made in this country for some time to come. It is somewhat absurd, therefore, to claim that there is danger of short supply. The wild stories of Krupp's ambition to control the Canadian nickel deposits and the longing of the Schneiders, of Creusot, for the same may well be dismissed. The many industries which utilize nickel in one or another form may therefore rest easy. The demand for armor plate containing 3½ per cent. of the metal is not likely to create a famine.

The movement of prices of pig tin in our own and foreign markets during the past month has been remarkable in some particulars, the rise, for example, having been caused by the relation of supply and demand, rather than by the manipulations of speculators, and, while catching some unwary "shorts," the advance has produced on the whole no great excitement. The manifest errors in statistics, as disclosed through the wide discrepancy between data coming from various sources, prompted inquiry that brought the true position out and prepared the trade for the results that followed. The outlook for October supplies is more or less uncertain. The several "authorities" differed several hundred tons as regards the amount of shipments from the Straits during the first half and the third week of the month, and there is a considerable difference between the estimates for the entire month. It is highly probable, however, that the present scarcity will not be relieved for some time, and unless 1300 to 1500 tons were shipped from the East during the last week, the fresh supplies for Europe and America will exceed the consumption very little, if at all.

A company has just been organized to manufacture and put on the market a complete combustion down draft boiler of the Post & Sawyer patent. The seat of operation of the new company will be Kansas City, Mo. They have acquired the right to introduce the boiler in the country southwest and west from that point, and also in Old Mexico. The capital stock is $100,000. They have bought the plant of the Mid-Continent Boiler Works in the East Bottoms, and the former owner of those works, Frank Palmer, will be the general manager of the new concern. The company expects to manufacture both stationery and locomotive boilers and eventually to add a complete locomotive building plant. This boiler is now being built in Portland, Maine, and a similar company is soon to be formed in Chicago for placing the boiler in the territory tributary to that city.

An entire change in the character of the United States army rifle depends on the results of experiments now making with smokeless powder.

THE CONFERENCE REPORT.

The following are the changes agreed to by the Conference Committee, so far as the metal schedule is concerned:

138. Boiler or other plate iron or steel, except saw plates hereinafter provided for, not thinner than number ten wire gauge, sheared or unsheared, and skelp iron or steel sheared or rolled in grooves, valued at one cent per pound or less, five-tenths of one cent per pound; valued above one cent and not above one and four-tenths cents per pound, sixty-five hundredths of one cent per pound; valued above one and four-tenths cents and not above two cents per pound, eight-tenths of one cent per pound; valued above two cents and not above three cents per pound, one and one-tenth cents per pound; valued above three cents and not above four cents per pound, one and five-tenths cents per pound; valued above four cents and not above seven cents per pound, two cents per pound; valued above seven cents and not above ten cents per pound, two and eight-tenths cents per pound; valued above ten cents and not above thirteen cents per pound, three and one-half cents per pound; valued above thirteen cents per pound, forty-five per centum ad valorem: *Provided*, that all plate iron or steel thinner than number ten wire guage shall pay duty as iron or steel sheets.

143. All iron or steel sheets or plates, and all hoop, band, or scroll iron or steel, excepting what are known commercially as tin plates, terne plates and taggers tin, and hereinafter provided for, when galvanized or coated with zinc or spelter, or other metals, or any alloy of those metals, shall pay three-fourths of one cent per pound more duty than the rates imposed by the preceding paragraph upon the corresponding gauges or forms of common or black sheet or taggers iron or steel; and on and after July 1, 1891, all iron or steel sheets, or plates, or taggers iron coated with tin or lead, or with a mixture of which these metals or either of them is a component part, by the dipping or any other process, and commercially known as tin plates, terne plates and taggers tin, shall pay two and two-tenths cents per pound. *Provided*, That on and after July 1, 1891, manufactures of which tin, tin plates, terne plates, taggers tin, or either of them, are component materials of chief value, and all articles, vessels or wares manufactured, stamped or drawn from sheet iron or sheet steel, such material being component of chief value, and coated wholly or in part with tin or lead or a mixture of which these metals or either of them is a component part, shall pay a duty of 55 per centum ad valorem: *Provided further*, That on and after October 1, 1897, tin plates and terne plates lighter in weight than 63 pounds per 100 square feet shall be admitted free of duty, unless it shall be made to appear to the satisfaction of the President (who shall thereupon by proclamation make known the fact) that the aggregate quantity of such plates lighter than 63 pounds per 100 square feet produced in the United States during either of the six years next preceding June 30, 1897, has equaled one-third the amount of such plates imported and entered for consumption during any fiscal year after the passage of this act, and prior to said October 1, 1897: *Provided*, That the amount of such plates manufactured into articles exported, and upon which a drawback shall be paid, shall not be included in ascertaining the amount of such importations: *And provided further*, That the amount or weight of sheet iron or sheet steel manufactured in the United States and applied or wrought in the manufacture of articles or wares tinned or terne plated in the United States, with weight allowance as sold to manufacturers or others, shall be considered as tin and terne plates produced in the United States within the meaning of this act.

152. On all iron and steel bars or rods of whatever shape or section, which are cold rolled, cold hammered, or polished in any way in addition to the ordinary process of hot rolling or hammering, there shall be paid one-fourth of one cent per pound in addition to the rates provided in this act; and on all strips, plates, or sheets of iron or steel of whatever shape other than the polished, planished, or glanced sheet iron or sheet steel hereinbefore provided for, which are cold rolled, cold hammered, blued, brightened, tempered or polished by any process to such perfected surface finish, or polish better than the grade of cold rolled, smooth only, hereinbefore provided for, there shall be paid one and one-fourth cents per pound in addition to the rates provided in this act upon plates, strips, or sheets of iron or steel of common or black finish; and on steel circular saw plates there shall be paid one cent per pound in addition to the rate provided in this act for steel saw plates.

186. Aluminium, or aluminum, in crude form, alloys of any kind in which aluminum is the component material of chief value, fifteen cents per pound.

OBITUARY.

Daniel Condit, a retired Newark manufacturer, died at his home in Madison, N. J., on the 25th ult., of apoplexy. He was 85 years old, and for many years was engaged in the foundry business as a member of the firm of Condit, Barlow & Shove. He was a bookkeeper for Seth Boyden, the great inventor, and succeeded him in the malleable iron business. He was a member of the Newark Common Council in 1845, and was one of the founders of the Newark City National Bank. He leaves several children.

George Wellington Shelton, the joint inventor with E. G. Atwood of the machine for bending the wire with which hoopskirts are made, died in Birmingham, Conn., recently, in his seventy-eighth year. He introduced hoopskirt manufacturing into Birmingham—an industry which at once brought the place into prominence—and made a fortune through his invention.

John D. Negus died on Friday, in Brooklyn, in the fifty-eighth year of his age. He had been troubled by nervous prostration and general debility brought on by overwork. Mr. Negus was a member of the firm of T. S. & J. D. Negus, a house enjoying a world wide reputation as makers of chronometers and nautical instruments. He also perfected the marine chronometer. He was a son of Thomas Negus, a man well known in the hardware trade in this city.

Arthur J. Stace, occuping the chair of civil engineering at the University of Notre Dame, South Bend., Ind., died on the 25th ult. The professor was a man of brilliant intellect and wide popularity. He was an author of note, and several of his books have received marked attention. He was a representative at the Paris Exposition in 1889, and his services there were highly appreciated.

An attempted sale of the property of the Boston Steam Heating Company, under foreclosure proceedings, was enjoined by the court. It was stated that the company would resume business after the steam pipes have been strengthened.

Condition of the Iron and Steel Trade in this Country and its Future Prospects.

The following is the paper which Mr. Hewitt was to have read before the Iron and Steel Institute. While many in the iron trade will differ from Mr. Hewitt, his utterances, as one who occupies a prominent position in the Eastern trade, will command attention:

I shall devote what I have to say to a consideration rather of the conditions under which the iron and steel business has grown to its present proportions, and to the difficulties in the way of its development on the scale demanded by the growth of the world and the progress of civilization.

The possession of fuel determines the direction, growth and remuneration of modern industry. The mineral fuel of the world is largely under the control of the Teutonic races, and hence the iron and steel business has been most extensively developed in Great Britain, Germany and the United States. Of these three countries, the latter has the largest and most cheaply worked deposits of fuel. Of the country lying east of the Mississippi river, the coal field occupies about 135,000 square miles generally covered by a fertile soil, traversed by natural water-ways, and tapped by railways aggregating over 100,000 miles in length. Around the edges of this vast coal field the older geological formations bring to the surface the deposits of iron ore belonging to the successive strata from the crystalline rocks to the recent tertiary deposits. The accumulation of ore is, in some portions of the country, upon a scale of grandeur which may well excite the wonder of the beholder. The connection between these vast deposits of ore and the fuel required for smelting them is, as a rule, remarkably convenient and easy. The magnetites of New York and New Jersey have been connected by rail with the anthracites of Pennsylvania, so that they may be brought together upon favorable conditions. The hematites and specular ores of Lake Superior reach the coals of Illinois and Ohio by a water communication which has been so perfected as to reduce the cost of transport below $1 per ton. The magnificent deposit at Cornwall, in Pennsylvania, which our guests will visit, is within 40 miles of anthracite coal, and accessible to coke at rates which leave nothing to be desired. When we pass to the South, we find in Alabama that the coal and ore are usually within 25 miles of each other, and sometimes to be found lying one over the other upon the same property. Between Pennsylvania and Alabama the ranges of ore extend in and along the Appalachian chain, in close proximity to admirable fuel, which, during the last few years, has been made accessible by railways and canals.

Until communications by canal or rail had been established between the coal fields and the ore beds, the progress of the iron business was necessarily slow. Its subsequent story is told in the following table, showing the comparative rate of increase in population and in the production of iron:

Year	Production of pig iron.	Rate of increase. Per cent.	Population.	Rate of increase.
	Tons.			
1830..	165,000.....	....	12,866,020	32.51
1840..	315,000.....	90	17,069,453	33.52
1850..	564,000.....	80	23,191,876	35.83
1860..	919,770 of 2,000 lbs...	65	31,443,321	35.11
1870..	1,865,000 of 2,000 lbs ..	105	38,558,371	22 65
1880..	4.295,414 of 2,000 lbs...	133	50.155,783	30.08
1890..	9,579,077 of 2,000 lbs...	130	64,000,000	28.00

This table brings out the striking conclusion that the production of pig iron has always increased more rapidly than the population, and that the ratio is an increasing one. Between 1830 and 1860 the production of iron increased twice as fast as the population. Between 1860 and 1890 it increased four times as rapidly, thus proving that the national wealth continues to grow from decade to decade at a rate of acceleration of which the world affords no previous example. Inasmuch as during all this time we have imported iron in addition to our production, it follows that the consumption per capita has also increased more rapidly than population. In 1855, according to careful calculations which I made at that time, we were consuming iron at the rate of 117 pounds per head; whereas in 1890 the consumption has increased to rather more than 300 pounds per head, the whole of which, for the first time in our history, we are producing within our own borders.

Great Britain, on the other hand, produces more iron than it consumes, and is still the largest per capita producer in the world. In 1889, with a production of 9,321,563 tons of 2000 pounds, and with a population estimated at 38,000,000, the production reached the large figure of 495 pounds per head. Deducting the exports, Great Britain is now consuming 250 pounds per head against a consumption of 144 pounds in 1855. But the production of iron in Great Britain appears to be now very nearly stationary, as will appear from the following table, giving the quanity produced since 1880:

	Gross tons.
1880.....	7,749,233
1881.....	8,144,449
1882.....	8,586,680
1883.....	8,529,300
1884.....	7,811,727
1885.....	7,415,469
1886.....	7,009,754
1887.....	7,559,518
1888.....	7,998,969
1889.....	8,245,326

This table discloses the fact that in 1889 Great Britain, while making an increase over 1888, was not able to reach the product of the years 1882 or 1883. It may, therefore, be concluded that no considerable increase of production is to be expected, especially in view of the facts that the present production is only maintained by the importation of foreign iron ores to the extent of 20.4 per cent. of the total ore consumption, and that the ratio of foreign ore consumed in Great Britain is a steadily increasing one.

In the United States the case is otherwise. We have been able to increase our total product year by year, without increasing the importation of foreign ores, none of which are in fact necessary to the existence and growth of the business, although in some localities, near the coast, foreign ores are desirable for the production of Bessemer pig. Assuming, then, that the production of Great Britain is not likely to be increased, and that the growth in the consumption of iron is to go on with the increase of population and the progress of industry in the future as in the past, we are in a position to estimate the demands which will be made upon the resources of the United States for the next ten years. The population in 1900, allowing the same rate of increase of 28 per cent. as in the last decade, will be 82,000,000. A consumption of 300 pounds per head will require 24,600,000,000 pounds of iron, equal to 14,300,000 tons of 2000 pounds. If, in accordance with the accelerated ratio of consumption, which has trebled since 1855, the per capita demands shall rise to 400 pounds, the total tonnage required will be 16,400,000 tons of 2000 pounds, equivalent to 14,800,000 gross tons. The consumption of the world in 1889 is estimated at 24,867,534 gross tons, of which we produced 30 per cent., and Great Britain 33 per cent. The consumption of the world has increased in eleven years from 14,117,902 tons to 24,869,534 tons or nearly 11,000,000 tons. Assuming that the coming ten years will require an equal increase (and it is likely to require more), the United States must supply 7,000,000 tons and the rest of the world 3,000,000, in order that the two continents may not be forced to draw supplies from each other. I think it is safe to estimate, therefore, that in 1900 the world will require 35,000,000 gross tons of iron, of which the United States must supply 45 per cent., and the other iron producing countries the remainder, in the proportion of half to Great Britain and half to Germany, France, Belgium and the other smaller producers.

The question presents itself, whether this vast demand can be met without such an increase in price as will tend to restrict the use of iron within narrower limits. The increased call upon the European countries is too small to make any embarrassment, except such as may arise from the fuel and food questions, both of which are serious problems in the European industrial world. The answer to the question must, therefore, come from the United States; and in view of the changed relations of the two continents in regard to the supply of iron, it will be seen that tariff legislation will henceforth play no part in the solution of the problem. According to the traditions of the Institute of Mining Engineers, it is not permissible to discuss commercial questions; but there is no impropriety in calling attention to the fact that one of the perplexing elements in the consideration of the future of the iron business is removed from the problem when the conclusion is reached that henceforth it will task the ability of Europe to supply its own demand for crude iron, and that the United States must look to its own resources for the supply of the great demands of the coming century. It is quite evident that the only effect of transferring any considerable portion of this demand from the United States to Europe will be to raise the price of iron, so that thenceforth the competition in the open markets of the world will be more favorable to our manufacturers than it has been in the past.

So far as we are concerned, then, the question is substantially whether this country can nearly double its production in the next ten years without so seriously increasing the present cost of iron as to restrict the consumption, and arrest the rate of progress at which the world is now moving forward.

The production of iron involves the five elements of fuel, ores, capital, labor and skill.

Fuel.—There is practically no limit to the quantity of coal which can be supplied on demand in the United States. The growth of this product corresponds very closely with that of the production of pig iron:

	Coal mined, tons.
1870.....	28,312,581
1880.....	63,773,603
1889.....	132,419,342

More than doubling itself in each decade. The capacity for production is always so far in excess of demand that it is often necessary to limit the amount forwarded to market by the action of the great corporations engaged in the mining and transportion of coal. Doubtless there will be required to meet the demand in A.D., 1900, nearly or quite 300,000,000 tons of coal. This can readily be had from the fields which are now open and have direct communication with the deposits of iron ores.

Iron Ores.—That our present supplies can be doubled in ten years does not admit a doubt. Probably the most remarkable points of interest to our guests will

be the great deposits of Cornwall, in Pennsylvania, of the Marquette, Menominee, Gogebic, and Vermilion ranges in the Lake Superior region, and the ores of Tennessee and Alabama, extending in an unbroken vein for hundreds of miles along the flanks of the great Appalachian coal field. The following statement of the growth of the business in the Lake Superior region will serve to show the facility with which the supply can be increased:

	Tons mined.
1885	2,466,372
1886	3,568,022
1877	4,730,577
1888	5,063,693
1889	7,292,754

Showing that in five years the quantity has increased threefold.

The South is practically a virgin country, in which the production of ore is in its infancy; but the development is already phenomenal, and even if the other regions ceased producing ore, the Southern States could readily supply the deficiency. It is remarkable also that the vast deposits of hematites and red fossiliferous ores with which the South is endowed are adapted to the "basic" process, while the ores of Lake Superior are suited to the "acid" process. Thus the two sections are practically the complements of each other in the work of supplying the needs of the country for steel. It will doubtless excite surprise in the minds of our visitors to find that the basic process has made no progress in this country. The delay has been due partly to the recent development of the Southern ores, and partly to the illiberal spirit in which the basic patents have been managed. But it will not longer be possible to arrest the manifold destiny of the South which is now erecting a large number of furnaces, the product of which must find a market through the basic process.

Capital.—The total wealth of the United States will be reported in the census just completed, but the figures are not yet available. In 1880 the amount was $43,642,000.000, which is equal to $870 per head of population. The rate of increase of population for the previous decade was 30.13 per cent., and of the per capita wealth 45.47 per cent. During the decade ending in 1890, the rate of increase of population is 28 per cent., and if the ratio of increase in wealth is only the same as in the previous decade, it will amount to 42 per cent., making the per capita wealth $1235. The actual figures will undoubtedly show a larger amount for each inhabitant.

In Great Britain, according to Robert Giffen, the wealth per capita, at present, is £270, equal to £1300, so that the two countries are probably on an equality of wealth as to each inhabitant; but the aggregate wealth of this country now, and for the first time, exceeds that of Great Britain, although the amount of floating capital is larger there than here. But it must be remembered that the floating capital of the world is now practically mobilized, so that, if a deficiency exists in the United States, it is promptly supplied from abroad,

Now, the wealth of Great Britain has been adequate for the annual production of 495 pounds of pig iron per head. It cannot, therefore, be doubted that, with equivalent wealth, we could meet a demand of the same extent. If such a result should be reached in 1900, we should produce 19,000,000 of gross tons of iron, which exceeds the estimate already made as to the probable requirements by more than 1,000,000 tons. The very large absorption of capital in the erection of new furnaces in the Southern States during the last two years, supplying a capacity of at least 1,000,000 tons per annum, when the furnaces now under construction shall have been completed, has been readily met; and this goes to show that there is no practical difficulty in getting the means to supply any quantity of iron which the market will take.

Labor.—For the supply of the raw materials and the smelting of our present product of pig iron, about 200,000 men are required. The labor of one man, therefore, now suffices to produce rather more than 40 tons of pig iron per annum. To produce in 1900, double the quantity now produced, will require the labor of 200,000 additional men. This is not more than the number of male emigrants who come annually to our shores, and it is but a small percentage of the normal increase of our population which between now and 1900 will reach at least 16,000,000 of persons. So far, therefore, as the supply of labor for the increased production is concerned, we need be under no apprehension.

Skill.—Our foreign visitors are about to make a critical survey of the iron and steel works of the country, and their judgment as to efficiency and management will be accepted as final. In 1876, when this country had not fully entered upon the manufacture of steel, in which it now leads the world, producing one-third of the whole supply, the foreign engineers bore testimony to the superiority of our appliances, and to the greater yield per man. Our methods and labor saving machines were at once copied by the best European establishments. I think I am safe in saying that we have not gone backwards in the interval, and that our guests will find something of value to be given in exchange for the priceless contributions which, since 1876, they have so generously made to the progress of metallurgy in this and other countries. At any rate, I think we have been quite ready to learn and to take advantage of every advance at home and abroad, so that our technique will be found to be fully up to the highest known standard of excellence.

It seems to be clear, then, that in all the elements required to meet the increased demands of the world for iron and steel, the United States are abundantly equipped. But it is not enough to have adequate supplies of ore and fuel. They must be so situated as to be brought cheaply together at the place of production. This condition has recently formed the subject of an investigation by the Commissioner of Labor, the Hon. Carroll D. Wright, and his results, so far as published, serve to show that the assemblage of material required per ton of pig iron can be made with as little labor and expense, on the average, in this country as in any country of the world. Indeed, it may be asserted that in no other country can the quantity required for the production of 20,000,000 tons per annum be brought together so cheaply, if at all.

The most remarkable fact in this connection is the constant reduction in the cost of transportation, which has been mainly accomplished by the extension and improvement of the railroad system of the country. It appears that the average rate of freights on all classes of goods since 1882, has been reduced from 1.236 per ton per mile to 0.976 in 1889.

The rates on iron ore, coal, limestone and pig iron are probably not more than one-half of the average rate, because they are raw materials of the lowest class. This showing, which compares most favorably with the rates on European railways, is the more remarkable because it is accomplished in the face of a higher rate of wages, thus indicating that other elements besides wages paid, enter into the determination of final cost, and must be taken into account by economists and lawmakers when they deal with the subject. The principal factor, however, in producing this desirable result has undoubtedly been the use of steel rails, due to the genius of Bessemer. His contribution to American prosperity will form the subject of consideration in another place, but it would be less than justice if we failed to record here that among all the agencies which have produced the phenomenal development of the United States during the last ten years, there is none which approaches in importance or is so far reaching in its influence as the process which has enrolled the name of Sir Henry Bessemer among the great benefactors of mankind.

But when the materials, the men, the money and the skill have been brought together, it still remains to secure such harmony of action between labor and capital as will insure steadiness of employment and continuity of operations. The final answer to our inquiry as to the ability of the United States to supply the iron required for the continued progress of the country and the march of civilization throughout the world depends therefore upon the establishment and maintenance of friendly relations between the employers and employed engaged in the work of production. Otherwise, it is quite conceivable that no considerable addition can be made to the present annual product. Indeed, this consideration throws much light upon the fact that Great Britain, with abundance of fuel and with access to adequate supplies of foreign ores, has not been able to maintain the product which was reached in 1882. We are thus brought face to face with the most serious problem of our age, because if we cannot increase our output, the growth of wealth, which now increases in a higher ratio than the increase of population and is necessary to the amelioration of social conditions, must become stationary.

It cannot be denied that throughout the world the relations between capital and labor are far from satisfactory. They are undoubtedly undergoing a process of readjustment not unlike that which followed the abolition of serfdom at the close of the Middle Ages. During the process of evolution leading to a new era there must necessarily be unrest, agitation, sometimes violence and generally severe loss on both sides, to the great detriment of society at large. The solution, when it comes, must be based upon justice; and it cannot come until public opinion is definitely made up as to the rights and duties of the contending parties, or until the contention shall cease to exist by the voluntary action of the combatants. Meanwhile, the severity of the struggle may be greatly mitigated and the final outcome accelerated if certain fundamental principles which have been estabtablished by the experience of mankind are kept steadily in view, and rigorously applied as each new complication shall rise. While the propositions which I shall state may be disputed by extremists, I think they will be generally regarded as axioms ingrained in the very constitution of human nature, and therefore to be accepted as standards of right and wrong to which all contentions may be referred.

1. Individual liberty consists in the right of each person to control his own life and to use the products of his labor in his own way, so long as he does not interfere with the equal rights of any other person.

2. Individual liberty implies the right of two or more persons to combine together and to use their property and faculties as they may see fit, so long as they do not interfere with the equal right of other individuals or combinations of individuals.

3. As population grows, there will necessarily be interferences among individuals and combinations of individuals, which must be adjusted; and hence the necessity for government and for tribunals whose judgment must final.

4. In countries where law expresses the will of the majority, and in which it can be amended as often as the majority may desire, there is no justification for resort to private or personal force in order to rectify wrongs, correct abuses and maintain the rights of men. If the courts of justice have not adequate jurisdiction, it is the duty of the legislature which represents the public will to supply it, and all agitation should be directed to secure such legislation; and no man or set of men should be allowed to take the law into their own hands, to usurp the functions of the courts of justice, or to forestall the action of the legislature.

Bearing these axioms in mind, the following conclusions may be submitted as incontrovertable:

1. It is the equal right of employers and employees to make combinations among themselves respectively, or with each other to advance or reduce wages, or establish or resist legislation which either or both may regard as essential, desirable or objectionable.

2. Neither party has the right to coerce the other into submission, except through the action of the courts or tribunals duly constituted to hear and decide upon causes of action submitted to them by either or both parties.

3. The right of workmen to refrain from labor and the right of the employer to cease to employ are correlative rights: but no one has the right to compel any other workman to cease from labor, nor has the employer any right to lock out his workmen in order to compel submission to obnoxious rules.

4. Strikes and lockouts are therefore equally indefensible on the ground of justice, and can only be tolerated in the absence of provisions for the submission of grievances to the adjudication of competent tribunals.

5. No man has the right to compel another man to combine with him in any organization, and when a man declines to combine it is a violation of right to refuse to work with him and to deny him the means of earning a living. It is equally wrong for employers to blacklist men, so that others will not give them employment.

6. A boycott cannot be defended under any circumstances whatever. It is in effect a declaration of private war, which is a crime of the Hatfield-McCoy class, to be stamped out by prompt and severe punishment.

7. The claim of any body of men that under any circumstances they have the right to stop the operations of business by the issue of an order in the name of organized labor or associated capital cannot be tolerated. When such an order is given in regard to any railway or any other means of communication, it is a direct assault upon the common weal; and the failure to arrest and punish the offenders thus usurping the executive functions of the State and the judicial power of the courts, is proof of cowardice on the part of the public officials and of degeneracy in that public opinion, which excuses or permits the violation of the principle of the common law, that "not even the king can obstruct the highway."

And yet we live in a country and under a government professedly of law founded upon public opinion, in which all these abuses go unpunished. If they continue, disorders will increase, and capital will retire from business subject to such outrage and disturbance.

The iron business, as now organized, is a field in which capital and labor are brought into direct and immediate contact. It requires the capital of at least $1000 for each man employed. It has grown up under the wages system, in which one party hires the other at an agreed price, and all the risks and profits of the business are assumed by the owners. Under the modern system of industry its operations are conducted on a scale of such magnitude as to require the association of capital in corporate organizations which have almost entirely superseded private firms and ordinary partnerships.

As a rule, the workmen have formed unions for the care of their interests, and especially to secure a satisfactory rate of wages. The formation of such unions is alike a right and a duty, and so long as they confine themselves to the assertion of the rights and the care of the interests of their members they are to be commended and encouraged. The employers, on the other hand, have also various associations for the protection of their own commercial interests, but no general organization, so far as I am informed, for the regulation of wages. Both sides are now prepared for argument, and in this fact is to be found the starting point from which may be readily reached the ground of conciliation and arbitration which ought to make strikes and lockouts a memory of the past, to be recalled as a warning and not as a menace. In England, which has taught us how to make iron and steel cheaply and well, the system of voluntary arbitration has been in operation since 1869 and has worked, in the main, in a manner satisfactory to both parties, and with decided advantage to the public. Official arbitration, under the law which was passed in 1872, has not been found to be acceptable to either workmen or employers, and no case has ever arisen under the provisions of the law from which enthusiasts expected the most beneficent results. On the other hand, too much is not expected or attempted in the voluntary arbitrations which have sufficed to settle most of the disputes of the last 20 years.

It is admitted that the question of wages is fundamental, and that it can only be solved by the equal representation of both sides, with an umpire, whose decision shall be final after the fullest submission and discussion of complete information as to costs, sales, and the condition of the trade. Attempts of either side to get the better of the other by tricks and misrepresentation have long since ceased, so that when a result is arrived at, the award of the arbitrator is accepted by both sides as a satisfactory solution. Here it is obvious that three fundamental elements of conciliation have been evolved from the contentions which formerly resulted in strikes and lockouts. The right of combination on both sides is admitted; the mutual equality of both parties is conceded, and the right of both to be informed as to the actual condition of the business is acknowledged.

In view of such an example and of the advantage of avoiding conflicts damaging alike to employers and employed, I am satisfied that we shall not be long in adopting a similar system of settling disputes by voluntary action, and that there will not be any disturbances serious enough to interfere with the rapid increase of product which, as we have seen, is required by the progress of our country.

It is manifest that this method of settlement involves publicity as to the profits of business. There is undoubtedly great reluctance and some ground of objection to the disclosure of cost and profits; but as a matter of fact the transfer of business to large corporations has really made this information public property, and in the iron business there is no longer any pretence of concealment either from stockholders or competitors. Surely, then, there remains no valid reason for denying to the workmen the information necessary to enable them to formulate reasonable demands, and it is to the interest of the owners to give this information, inasmuch as the margin of profit on manufacturing operations is now narrowed down to the smallest limits consistent with a moderate return on the capital employed. There is so much misapprehension on this point in the public mind that I am impelled to say that in the great staples of trade it is exceedingly difficult to get an adequate return for the capital employed, and the business is often conducted for long-continued periods on a basis which ensures only wages for labor, without any return whatever for capital. Where large profits are realized, they are due either to the production of specialties covered by patents, or to the possession of raw material under exceedingly favorable conditions of cost or locality.

There is no feature in the business more pronounced than the excessive competition which cuts down profits to a minimum, and hence attempts have been made to control product and prices, through combinations looking to the maintenance of standard prices, and, in some cases, by the reduction of the output. In the public mind such arrangements are confounded with trusts, which have been the subject of so much recent criticism and denunciation. The objection to trusts is not to be found in the magnitude of their operations. This, in the modern development of industry, is unavoidable, and constitutes, in fact, an advantage to society by insuring lower prices and better quality, and to the workmen by providing the best appliances for labor and arrangements for the preservation of health and the increase of comfort. It is only when trusts attempt to create a monopoly and succeed in destroying competition that they become injurious to the public welfare. It is extremely doubtful whether it is possible to maintain in this country an effective monopoly of any staple product of industry, but whether possible or not in other branches the iron business is too widely diffused and is too vast in extent to admit any monopoly not sanctioned by law. The concentration of business, however, in special localities and the consolidation of interests in order to secure enactment of administration is a public benefit. The greater the organization and the larger the capital employed the more certain it becomes that the business will be steadily prosecuted, thus avoiding the greatest evil under which workmen suffer—lack of constant employment. The principle of association developed in great industrial corporations is therefore altogether beneficial, and should have the hearty sympathy of the public, and especially of the labor organizations.

In any previous period of history such vast establishments might have been converted into devices for oppressing the workman and for preying upon society by excessive prices; but in the presence of powerful labor organizations, whose right to demand information and whose power to obtain justice is now conceded, no oppression is possible, and no exaction can be continued under the scrutiny of an omnipresent and omniscient journalism. Society has therefore nothing to fear from the growing tendency of workmen to form unions and of capital to centralization in great industrial corporations. But society has a duty to perform in the enactment of legislation which will regulate these organizations by a clear definition of their respective rights and duties.

Publicity, inspection and discussion are the great safeguards which the public can apply, in order to correct abuses and avoid conflicts and disastrous losses. The discouraging feature of the time is that the legislative department has shown not merely indifference but abject cowardice in dealing with the questions which from time to time require the interpretation of the law. Some of the legislation which has been recently enacted is a positive

violation of the fundamental axioms which I have ventured to lay down and of the provisions of the Constitution in reference to the liberties of the citizens, which are quoted in the outset of this address; but the greatest evil is the failure to legislate at all with reference to interferences which result in constant conflict, to the great injury of the public. What we need, therefore, is a recurrence to the well settled principles of jurisprudence, a higher order of statesmanship, and the courage on the part of our public men to stand up for the right, though for the time it may involve the sacrifice of personal popularity.

The course of procedure is clear. All organizations which avail themselves of the provisions of the law for the creation of corporations, should be required to report the result of their business and be open to the inspection and scrutiny of public officers appointed for the purpose. This principle is already recognized and enforced with reference to savings and other banks, insurance and trust companies, and railway corporations. It has not yet been applied to industrial organizations; but these now exist on so large a scale and employ so many men, disputes with whom affect the public convenience and interests so seriously, that every safeguard should be applied to prevent the disturbance and dislocation of industry. Publicity as to profits and losses would at once remove the most serious cause of strikes, which often take place when it is impossible for the employer to concede the demands of his men, because his profits will not warrant the concession. With proper information, the intelligence of the workmen may be relied upon not to make an issue which can only result in failure.

It will not be necessary to give any compulsory power of rectification to the officers charged with the duty of inspection. No real abuses can survive the criticism of the press when they have been fully investigated by an impartial tribunal. No strike can then succeed, unless it is based upon an abuse recognized and reported as a positive grievance by competent authority. All trade regulations and the rate of wages can then be safely left to voluntary agreement between the representativess of master and men, sitting as equals on a board of conciliation, and presided over by an arbitrator who has the confidence of both.

Violations of the fundamental principles of society should be made crimes to be promptly punished. The Legislature will readily respond to sound public sentiment in this respect; and a stern enforcement of the law is the best security for peace and order.

With industry under the control of great corporations endowed with adequate capital, with the workmen thoroughly organized to protect their rights and advance their interests, with proper public inspection and publicity as to the condition and results of the business, with legislation covering the grounds of conflict, and with the co-operation of the judicial arm clearly expounding and steadily enforcing the law, it does not seem difficult to forecast the outcome of the evolution which is going on in the industrial world, and which seems to be full of promise and encouragement under the beneficent law which Edward Atkinson discovered, and which he and Robert Giffin have demonstrated, to wit: That labor is receiving a steadily increasing share of a steadily increasing product; and that capital is receiving a steadily diminishing share of an increasing product still insuring for it an adequate remuneration.

More than 50 years ago, John Stewart Mill laid down the proposition that when employers and employees had a common interest in the work, in the nature of a partnership, the means would exist of "healing the widening and embittering fued between the class of employees and the class of capitalists." Since these words were written the fued has widened and the conflicts have become more frequent and more intense. On the other hand, the work of educating both employers and workmen has been going on in a bitter school of experience. Various attempts have been made to get the two classes together on some basis of organization which will make the remuneration of each directly and visibly dependent upon the profits of business. Under the exising system, wages are necessarily paid out of profits in the last analysis, but the rate and amount are not determined by the actual results from day to day. On the other hand, they constitute a prior lien upon the business, as well from necessity as now by law, and are thus exempt and guaranteed against the losses of the business.

The workman, however, fails to perceive that he is thus dependent upon the profits in order to get wages, and that he has the preference over all other claims upon the product of the business. Hence the sense of personal interest is lacking, and the success of the enterprise forms no part of the workman's current of thought. He has, in fact, no means of knowing the condition of the business, and his individuality is lost in the vast aggregation of energy which is combined in order to produce the results of modern industry. In England, it is notorious that the action of the trade unions has been exerted in the direction of obliterating the individual to such an extent that special skill is rapidly declining, and in the finer grades of work it is almost impossible to find the experience required for the production of instruments of precision. This is a national evil of the first magnitude; and its disastrous consequences are becoming more apparent to the intelligent workman whose opportunities to rise in life are thus abridged and destroyed.

Slowly but surely, therefore, a new idea has been taking root in the industrial mind. Profit sharing is getting to be a familiar thought both with employers and workmen, and many promising experiments in this direction are now in progress in this and other countries. The practice is to pay the current rate of wages in the usual manner, then to allow a reasonable percentage on the capital employed, and, if there be any excess after these payments, to divide it equally or otherwise between the capital and the labor, estimated by the amount of wages paid. The success of this system depends obviously upon the ability of the business to earn the current rate of wages. As this is not possible at all times, the employer must have sufficient capital to carry on business at a loss for a season, with the expectation of recouping the loss out of the future profits. It is idle to expect that workmen will be able or willing to refund losses, the risk of which must remain, therefore, as it now does, with the employer. Hence the necessity and usefulness of the great organizations under the control of which the iron business is passing, by steady and irresistible progress. In such establishments the work of production will go on in bad as well as in good times, and the workman will be secured against the evils of intermittent employment.

But even this advantage is not sufficient for intelligent and ambitious men. Each man should be paid wages according to the value of his labor, and not on the mistaken basis of a dead level of mediocrity advocated and enforced by some trades organizations. Progress is only possible where the individual is encouraged to develop his skill and apply his labor, by a payment in proportion to the results achieved. But higher and beyond all this stands the stimulus of being engaged in a successful business and having a direct interest in its results. If the workman were a stockholder as well as a laborer working for wages, he would have such an interest; and this would tend to raise his self-respect as well as to develop his energies. But profit sharing, as it is called, will never be popular with the workman, because, on the face of it, it is an act of grace from the employer.

A self respecting workman is not willing to accept charity. What he wants is justice; and any concession from the employer which does not recognize the right of the workman will be, and ought to be, rejected by independent and self respecting men. When a workman, however, becomes a shareholder, either by payment for stock or by an agreement to pay for it out of his earnings, he stands on a level with the capitalist, and in fact, as well as in theory, is in a position to feel that he is working for himself in doing his best to promote the success of the business in which he is engaged.

It should be a matter of congratulation, therefore, that the formation of trades unions contemporaneously with the rapid growth of large corporations whose stock is divided into such small shares as to admit of easy distribution, clears the way for the new era when every self-respecting workman will insist upon being an owner, and every well managed corporation will see that its workmen are directly interested in the results of the business. To effect this desirable end, no compulsory legislation and no addition to the powers of corporations are needed. The educational influence of the conflicts which have occurred, has already done much, and the conferences which frequently take place as to wages and regulations, are doing more to establish a better understanding, to create harmonious action and to develop the idea that business cannot be carried on unless both the capital and the labor employed share directly in the proceeds. The two classes are organized, as it were, into armies of observation, and occasionally they come into conflict, but the chances of collision are becoming daily smaller and will disappear altogether when their differences are merged in a sense of common ownership through the agency of corporations, admitting and cultivating the direct participation of the workmen in the profits.

It is, however, by no means necessary that all workmen should thus become shareholders. There will always be a considerable element of an unstable and unintelligent character, whose participation in the ownership is neither desirable nor possible; but I think the time is near when it will be discreditable to a workman not to be also an owner in the establishment in which he works, and that all workmen of the better class will have such an interest. It is quite conceivable that the workmen may ultimately acquire the preponderating interest, in which case the best possible solution will have been reached, in which labor hires capital at the lowest possible rate and thus becomes the main factor in the conduct of industry. This process can only succeed in establishments which have all the elements of success in the way of location and the possession of raw materials and of appliances for work. But such corporations, in the iron business at least, are so numerous as to offer abundant opportunity for the inauguration and successful application of this beneficent policy. I am glad to say that one of the greatest of our organizations, recently formed by the consolidation of several large establishments most favorably situated in all respects, the Illinois Steel Company, has made a promising beginning in the direction of interesting its workmen in its business. The outcome of this experiment will be watched with very great in-

terest; and it may be commended to the attention of our guests as the most important and encouraging feature of our wonderful development, because it shows how the concentration of force under one management, in accordance with the modern tendency to centralization, may be made to solve, and must necessarily solve, the problem of harmonizing capital and labor engaged in the work of production without new legislation or the application of any other than familiar and well recognized principles of social organization.

The points which I desire to enforce by these arguments are:

1. That the industrial world has been steadily moving during the present century in the right direction for the welfare of mankind, and that the disturbances which have occurred have been necessary incidents of a beneficent evolution in the steady advance in the wages of labor and in the distribution of the proceeds of industry upon the basis of equality and justice.

2. That it is not necessary to invoke any new principles of government or to inaugurate any revolution in order that capital and labor may be associated together in peace and harmony. Progress is rather to be sought in diffusing a knowledge of the principles upon which government is founded, and by appropriate legislation framed in accordance therewith to meet the necessities of the complex relations arising out of advancing civilization and the unprecedented increase of riches in our day. A rigid enforcement of the laws thus formed is the necessary and sole condition for the maintenance of progress, peace and order.

3. That the time is approaching when capitalists and laborers will more and more be joint owners in the instruments of production. That while the wages system will necessarily survive, the workmen will, to a large extent, become their own employers, and finally may hire capital as capital now hires labor. The facilities offered for the division of property, through the distribution of corporate shares, will lessen strife, develop skill, reduce cost, increase production and promote the equitable distribution of wealth, which, it must never be forgotten, is the chief end of the social organization.

4. That the invasion of government into the domain of industry must be met with uncompromising opposition. The proper function of government is supervision, regulation and adjudication. The work of production and distribution belongs to the citizen. Any departure from this principle must result in the ruin of free government and in the substitution of despotism, the characteristics of which are communism, anarchism and nihilism.

Our contract labor law is an example of the pernicious character of such interference. It affords probably the only instance in history since the expulsion of the Huguenots from France, in which the Government has deliberately decided to deprive itself of the highest order of skill, by refusing to admit trained workmen, although it is still willing to receive ignorant and incompetent immigrants.

But in condemning the interference of the Government in the actual work of production or distribution, let me guard against the inference that I am not in sympathy with the modern tendency of legislation to ameliorate the condition of the laboring class by suitable regulations of the hours of labor, by securing elementary and technical education, by improving the dwellings and providing for the general recreation of the masses. Neither do I object to the control by the Government of all functions which are of a general nature, such as the transmission of letters and the care of the public health. But even in these cases the general government should confine itself to administration and regulation, employing as far as possible the agencies provided by private enterprise.

The general tendency of the age is, however, in the right direction, and it cannot be arrested by a few temporary violations of sound statesmanship. The remedy will speedily be found when the workmen generally shall acquire a direct interest in the great industrial organizations of our day; and it is to this result that all intelligent and patriotic men should direct their efforts. The very simplicity of the plan may suggest doubts as to its efficacy, but all doubt will vanish, I am sure, if in our trade the proprietors and managers shall make an earnest effort to interest the workmen in the ownership of the property by making it easy for them to acquire shares upon the same terms as they can be purchased by capitalists. So certain am I of the disappearance of all strife when this diffusion of ownership shall become general, that I have been impelled to ask for this subject the thoughtful consideration of the representatives of the iron and steel industry of the world, now for the first time assembled in the country where the final development of this business must take place upon a scale of unprecedented grandeur.

If I have ventured to give an exceptional and unusual direction to this address, it is because I am fully persuaded that the conflict between capital and labor cannot go on without impeding, and finally paralyzing, the operations of the industrial world, and interrupting the continued progress of society in wealth, comfort and civilization. The present century, now nearing its close, has been pre-eminently an era of invention and of development in the forces of nature, enriching society, and opening possibilities of general culture beyond the dreams of enthusiasm. Industrial peace is, however, necessary to the fruition of the hopes of a better adjustment of social relations, and of progress which will remove all privilege and all artificial impediments to the final establishment of equal rights. It is encouraging to think that this result can be reached without seeking for any new principles of government or introducing any new methods of legislation. *Natura viam monstrat.* We have no more reason to fear association than we have to dread competition, for they are the necessary and inseparable factors of progress. They are the agencies which have transformed the face of society during the present century. They are only in the infancy of their power, and no man can measure their potency in overcoming the evils which survive or which have been incidentally occasioned in the application of the natural forces in new directions. If we are careful to secure the maintenance and the application of individual energy, we have nothing to fear from association and combination. Participation in the ownership of the instruments of production and the agencies of distribution, rendered possible through the subdivision of the shares of the great corporations which control the domain of industry, will give the workmen who are employed in their conduct full scope for individual energy and the development of special skill in every department. The general distribution of shares is, therefore, to be encouraged as the true solution of the conflict between capital and labor, and may be relied upon to bring peace out of contention without resorting to the exasperating fallacies of communism, or the dangerous tendencies of class legislation, or to governmental interference with industrial pursuits.

The iron shipbuilders and boiler-makers organized a union in Boston, with Joseph Riley as president.

American Institute of Mining Engineers.

The Fifty-seventh Convention of the American Institute of Mining Engineers, held in New York, will long be remembered because of the attendance, as guests, of many of the most distinguished members of the British Iron and Steel Institute and of the Verein Deutscher Eisenheuttenleute—men who, by the work they have done at their own homes in Europe, have made their names honored and respected in America.

Opening Session.

James F. Lewis, chairman of the Local Committee, opened the convention on Monday afternoon by a few words of hearty welcome, and then outlined the programme which had been arranged for the entertainment of the visitors during their week's stay in the city.

The Hon. Abram S. Hewitt, president of the Institute, then said that "Mining engineers are always welcome in New York, because the people understand perfectly well that the growth and prosperity of this city is mainly dependent upon the work done by men of science, and by practical men who are carrying on the great work of exploration and development throughout the length and breadth of the land. New York is the clearing house of the whole country, and nothing that any mining engineer can do in its remotest part can be without its beneficial effect on this city. Hence New York will always greet the mining engineers as friends, and as men who are busy in making us all prosperous, and, I hope, all rich. The proceedings of the Institute will go on in regular order, in accordance with the programme. The week will be one of general rejoicing, I am sure, in every department of the city, among those at the head of its government, as well as among the humblest toilers in its service."

The first paper, presented was by J. C. Bayles, on

EXPLOSIONS FROM UNKNOWN CAUSES.

Mr. Bayles said that three accidents, the cause of which had not as yet been explained, had come under his notice in one establishment. The first of these curious occurrences was the bursting of a 16-inch pipe carrying air under a compression of about one pound. The pipe was made of light galvanized iron with soldered seams. Into it a rotary fan blower delivered air, and from it smaller pipes were carried to the furnaces. The blower was run continuously. Neither the main pipe nor its branches had any connection with the gas conduits. Both air and gas pipes delivered into the furnaces; but although the gas was under much higher compresson than the air, there appeared to be no good reason why, having free escape in case of leakage, it should ever make its way back into the air pipe. One warm afternoon in June the main air-pipe exploded with great violence. Every window in the mill was blown out, a considerable section of the roof was raised an inch or two, and in several places it was blown through. The pipe was torn into a thousand pieces, and a wagon load of fragments not larger than his hand were scattered all over the mill. Several of these fragments were driven edgewise into the roof timbers. The disk closing the end of the pipe was projected against a brick wall with such violence that it remained fastened in place, and is there yet, a mural tablet commemorating the event.

The pipe in which the explosion occurred extended the whole length of the

mill. The machines then in use were placed together near the end connected with a blower, leaving some 80 feet of what may be called dead end. It was in this dead end that the explosion occurred. The portion of the pipe from which outlets were taken was substantially uninjured, but 75 feet of the 80 feet beyond the furthest outlet were utterly destroyed. The fact that with very little mending the part of the pipe which the explosion had not reached continued for some months to supply the machines with air shows how local the explosion was, and the damage to the mill building gave sufficient evidence of its violence.

The natural explanation of this explosion is that gas found its way into the air pipe and was packed away in the dead end, and that when mixed with air in explosive proportions it reached a furnace and exploded. He could only say that the most rigid investigation failed to explain how the gas got into the air pipe against the pressure it carried, and why an explosion beginning at a furnace should have restricted its effects to the dead end of the air pipe. It was undoubtedly a gas or vapor explosion, but he could find no other explanation of the presence of gas or vapor than that it was formed by the volatilization of the oil consumed in lubricating the trunnions of the blower. It is conceivable that the large amount of oil consumed by the blower is volatilized, and that it becomes a hydrocarbon gas, which would behave like any other gas of similar composition. This gas, being lighter than air, would occupy the upper part of the pipe and remain undisturbed while air was drawn from outlets taken from its under side. This light gas may have worked along and accumulated in the dead end of the air pipe until it reached, in admixture with the air, the explosive condition. But whence the spark? And why, if fired by a furnace, was the destructive force of the explosion exerted so far from the point of ignition? This hypothesis assumes that the volatilized or gasified oil of many days' running would remain undiffused for as many nights, until its accumulated volume was great enough to explain the phenomena of the subsequent explosion. The best that can be said of it is that perhaps it is better than no theory at all.

Nothing similar has occurred since. The galvanized iron pipe was replaced with a sixteen-inch steel tube, 400 feet long, to meet the increased requirements of the establishment. All the other conditions remain the same, except that a small opening was left in the end of the pipe which cannot be wholly closed. Whether this is necessary is not known.

"The second of the curious accidents I shall mention was the explosion of a No. 6 Sturtevant blower. I was a witness of this amusing, though somewhat alarming, occurrence, and can speak of it from personal knowledge. The blower was inside the mill, and was driven by two belts from pulleys on the main line of shafting. It was used to furnish blast for the gas generators. Some trouble with the main driving belt necessitated a stoppage of the mill engine, and the blower stopped. In a few minutes the engine started again, and with it the blower. It had been long in use, but as this was its first day of service in that position I was naturally curious to see how it worked. So I stood watching it. Suddenly it disappeared. One side passed close to me and lodged against a post. Fragments weighing 20 to 50 pounds were distributed in all directions. The explosion was accompanied by a violent report and succeeded by a dense cloud of yellow-brown offensive smelling smoke, which rose to the roof, rolled right and left, and finally escaped at the monitor.

"Again I investigated, until there remained no questions to ask. That it was not a centrifugal rupture I knew without being told. The conclusion was that during the stoppage of the engine some air gas from the producers had worked back through the pipe into the blower. When the blast was resumed these products of imperfect combustion were carried with the air current into the producers, and being mingled in explosive proportions had been fired by contact with the incandescent fuel and exploded. This explanation was never quite satisfactory to me."

Mr. Bayles then explained the connections between the producer and blower, and said that the pipes, some of which were light and some heavy, were undisturbed, even the delivery pipe of the blower remaining coupled to the length of pipe on the mill floor.

"The third of the series of unexplained accidents consisted of two explosions following one another so closely, and under conditions so nearly identical, that they may be considered as one episode. In the purification of gas we use purifying boxes of the usual pattern. We have four boxes so connected by the center seal that we can throw any one of the four out of use when it is necessary to clean it. The gas always passes through three boxes before reaching the gasometer, and one is always kept ready to be filled with fresh iron and brought into use when needed. When the gas shows the presence of impurities or diluents it is time for a change.

"One day the superintendent and manager had occasion to go into the purifier house together, and while there the superintendent tried the gas. Getting a reaction indicating the presence of impurities, and finding the idle box ready, he turned the center seal, cutting out the box which had been the first to receive the gas, and making the clean box the last of the series. The cap of the outlet was left off for the escape of the air, and not screwed on until there was a strong smell of gas, indicating that the air had been expelled. The same thing had been done in the same way hundreds of times. In two or three minutes the third box exploded with great violence. The cover was wrenched loose from the four clamps holding it down, carried up through timbers and roof and dropped again, badly wrecked. The center seal was canted to one side, allowing a copious escape of gas. The building took fire, and a second explosion in the basement blew out about half the foundations. The second explosion was easily understood. Fortunately, fire extinguishers and hydraulic jacks saved the building, and except the need of repairing the broken box the damage was slight. I at once began an investigation, which has lasted ever since. The explosion was undoubtedly due to the ignition of a mixture of gas and air in the box; but how was it ignited? The gas, before reaching the box in which the explosion occurred, had passed through the hydraulic main, two scrubbers, more than 500 feet of unjacketed pipe, and two purifying boxes, each containing three layers of wet sequioxide of iron. It requires a violent stretch of the imagination to believe that a spark could travel so far under conditions so adverse. The pipe which delivers gas to the boxes is rarely quite cold, but I have never found it more than warm. The tops of the boxes are always cold, and the gas enters the gasometer at atmospheric temperature. While we were speculating as to the cause of this accident, and congratulating ourselves that it was never likely to happen again, another box, the third of the series in use, exploded under exactly similar conditions. A detailed account of one explosion describes the other perfectly.

"Matters were getting serious. I must find out what was wrong and correct it. So I called in all the experts I could reach. Some were honest enough, after looking the plant over, to confess that they had no explanation to offer. Others gave reasons which would have been satisfactory had they not been at variance with the facts. For the information of those who may be disposed to speculate as to why these boxes exploded I may say:

1. The hydraulic main is modeled after the best gas-works practice.
2. The scrubbers are adequately supplied with water.
3. The iron in the boxes which exploded was found, on analysis, to contain less than 9 per cent. free sulphur, and is still in use.
4. The iron was adequately revived before being replaced, and did not heat in the boxes. After the explosions it was found to be cold.
5. The iron was sufficiently wet.
6. There was no fire in the purifier house and "no smoking."

Since these two explosions, which occurred in April last, we have had no trouble. There has been no change in the arrangement of the gas plant, for we can discover no way to improve it.

Oberlin Smith's paper on "Cast Iron Tools for Cutting Metals" was not read, owing to the absence of gas supply for the lantern.

A paper presented by John C. Fowler described

MAGNETIC CONCENTRATION AT THE MICHIGAMME IRON MINE, LAKE SUPERIOR.

The author stated that he had studied the different ways of mechanical sorting, but found none satisfactory—the universal objections being the expense, the small quantity that could be handled per hour, and the low grade of ore produced after all.

Careful investigations showed that neither dry nor wet concentration was the right process and he finally studied the magnetic process. Not knowing of any magnetic separator in this country that would handle such large pieces of ore as he wished to treat, he looked abroad and found in Sweden the Wenström separator. One of these machines, having a 15-inch face of drum, was obtained and a small crude mill and screens put up. There were shipped from this mill 11,000 tons of concentrates in 1889, a part of which, produced from crude 50 per cent. ore, contained 65 per cent. of iron, while the remainder, produced from crude ore running 52 to 54 per cent., carried 60 per cent. iron. In view of this satisfactory result in the separation of large and small pieces of ore, attention was turned to the large number of old dumps about the mine containing a large amount of iron. This ore was screened and 61 per cent. of iron obtained.

The experience at this mill shows that the fine powdered ore and the ore going through a ¼-inch screen should never be allowed to fall directly on the separator, but should be carried near the separator by a belt on an inclined plane and attracted to the drum of the separator by the electro-magnetic force. It is almost impossible to feed this fine ore directly on a separator in a sheet sufficiently thin to permit a satisfactory separation, because ore and rock overlying one another are bound together in the drum; but by feeding the fine ore by a belt up to the separator, the mass of material is agitated, and the ore flies to the drum and the rock falls, or remains on the belt. The greater the electric current which is carried on the separator, and the further away from the separator the crude ore is when it enters the magnetic field, the higher will be the percentage of iron in the concentrates and the lower in the tailings. For instance, crude ore containing 52 per cent. of iron and 0.224 of phosphorus, when treated directly on the separator, gave concentrates in one case containing 58 per cent. of iron and 0.215 of phosphorus; and in another case 60 per cent. of iron and 0.180 of phosphorus; while the same ore, treated by a belt feed,

not in contact with the separator, gave concentrates containing 67.07 per cent. of iron and 0.160 of phosphorus.

The paper describes in detail the method of treatment in the mill, the results obtained, and illustrates both the Wenström and Buchanan separators. The paper states that "the Buchanan separator is very well built; it has a much larger capacity than the small Wenström machine, and makes richer concentrates. It carries a current of 23 ampères, and is wound with heavy copper wire. The Wenström machine, on the other hand, can carry only 10 ampères, and is wound with wire of one-third the size. We keep the Wenström machine in use only because we happen to have it."

F. H. McDowell described "Ore Dressing by Electricity at the Tilly Foster Mine," and the results are embodied in the following conclusions:

1. Unless the location and other conditions are exceptionally favorable it will not pay to erect works to treat the material of waste dumps carrying less than 25 per cent. of iron.
2. Where the lean ore is mined in connection with shipping ore there must be a corresponding increase in the percentage of iron to offset the mining and royalty charges.
3. Where no shipping ore is produced there must be a still further increase in the percentage of iron to warrant the erection of hoisting, pumping and dressing works.

Mine owners will readily understand that no rigid rules can be laid down where the ore characteristics and local conditions are constantly varying. Before establishing large works, the most thorough and comprehensive tests should be made.

"The Magnetization of Iron Ore" was the subject of a paper by Clemens Jones. C. M. Ball described the Ball and Norton Monarch Magnetic Separator, and exhibited a working model of the machine.

At the evening session Prof. William B. Potter, who is connected as consulting engineer with the Iron Mountain Mine, read a paper on that great deposit, illustrated with lantern views. Through early descriptions of that mine, the iron trade is pretty thoroughly familiar with its special features, and we reserve for a future occasion a fuller presentation of the facts presented by Professor Potter.

This was followed by a paper by W. F. Durfee, on "American and Foreign Practice with the Diamond Drill." Mr. Durfee is connected with the Pennsylvania Diamond Drill and Mfg. Company, of Birdsboro, Pa., who have carried through avery large number of operations of this kind.

Tuesday.

The morning session on Tuesday was consumed by the presentation of a paper by H. C. Spaulding, of Boston, Mass., on the "Electric Power Transmission in Mining Operations." The three other papers on the programme for this session were not read, owing to the absence of the authors. The papers were: "Physical and Chemical Equations of the Open-Hearth Process," by H. H. Campbell, of Steelton, Pa.; "Wire Rope Tramways," by J. Pohlig, of Cologne, Germany, and "Water Gas in Europe," by E. Blas, of Essen, Germany. The following papers were read by title and distributed in pamphlet form at this session: "Amalgamation at the Comstock Lode, Nevada; a Historical Sketch of Milling Operations at Washoe, and an Account of the Treatment of Tailings at the Lyon Mill, Dayton," by A. D. Hodges, Jr., of Boston, Mass., and "Notes on the Excavation of the New York Aqueduct," by J. P. Carson, of New York City.

The afternoon session was opened with a paper by R. M. Daelen, of Dusseldorf, Germany, the leading exponent of rolling mill practice on the Continent, with a paper entitled: "Notes on Recent Improvements in German Steel Works and Rolling Mills," which we shall present in an early issue.

Mr. Daelen's remarks upon the growing popularity in Germany of soaking in plain (unfired) pits brought out some discussion. R. W. Hunt, of Chicago, referred to experiments carried on at the Edgar Thomson Works, under the late Captain Jones, in which some $30,000 or $40,000 were expended in experimenting with the plain, unfired, soaking pits. The experiments were a failure, as were also extensive and persistent trials carried on at the Joliet Steel Works about the same time. The only case where they seemed to work successfully was at the works of the Scranton Steel Company, Scranton, Pa., where the first efforts were crowned with success, but for some unexplainable reason the system was abandoned later on. In both of the former cases, Mr. Hunt stated, the ingots had to be transported several hundred yards before reaching the pits, and naturally they become somewhat chilled during this interval. It was later explained by a member of the Institute that the reason the system was abandoned at the Scranton Works was because the size of the ingots were so increased that the soaking pits became too small, and that it was not convenient at that time to enlarge them, nor has it been convenient to do so since. It was further stated that Captain Scranton had expressed the greatest faith in the plain, unfired pits, and that the enforced abandonment of them was a source of regret to him.

S. T. Wellman, of Thurlow, Pa., president of the recently organized Wellman Iron and Steel Company, presented a paper on the "Machinery for the Charging of Heating and Melting Furnaces," which he has been connected with in this country in so prominent a manner. We shall at a future occasion place before the readers of *The Iron Age* the paper in question, with accompanying illustrations.

R. W. Hunt's paper on "American Rolling Mills" was not read, Mr. Hunt stating that he had not had an opportunity to get it in such shape as he would like to have it when presented to the meeting. We also expect to present, in more complete form than is now possible, the paper by James Morgan, of Pittsburgh, on "A Suspended Feed Table for Rolling Mills."

A number of papers were read by title and distributed in pamphlet form.

PNEUMATIC HOISTING

was described by H. A. Wheeler, of St. Louis. He said, in part:

The pneumatic system is entirely free from the defects inherent in the rope system, since it is not subject to the influence of depth, and gives no initial heavy dead load, due to the weight of the rope, being in this respect a theoretically perfect medium for "pulling" mineral out of the deepest possible mine. This system, as installed at the Hottinguer shaft of the Epinac Colliery, Saone-et-Loire, France, was designed by M. Zulma Blanchet, who was the managing director of a large company operating several mines and a local coal railroad at Epinac, in Central France. The first suggestion for thus using air was made in 1852 by M. Gruner, the director of the School of Mines of St. Etienne, and a model constructed on this principle was exhibited by M. Cave at the first Paris Exposition; but the credit of first putting the system into practical operation is due to M. Blanchet. The vertical Hottinguer shaft, started in 1863, had reached a depth of 2133 feet in 1871, and was to be sunk to a depth of at least 3300 feet; but unfortunately for the company and the entire mining world, no workable coal has thus far been met with, so that instead of developing a large mine to raise over 700 tons a day, it still remains (1889) a prospect, while the plans of M. Blanchet were not satisfactorily completed, on account of the great expense of installation and the discouraging nature of the explorations. So, although a thorough test of the system was not made, according to M. Blanchet's more advanced ideas, yet sufficient experience was gained to furnish evidence as to the practical desirability of this novel system of extraction.

M. Blanchet's plan was to have one or two continuous air-tight sheet iron cylinders or large tubes extending from the bottom to the top of the shaft. Within the cylinder moved a piston, to which was hung a cage with as many decks as desired, nine decks being used at Epinac, while suitable air tight doors open out at each level for allowing the decking of the cars. It was operated by exhausting the air from above the piston, and as the lower side was open to the atmosphere, the piston was raised by the difference in pressure of the atmosphere and the vacuum produced by the air pump. For lowering, it was merely necessary to allow the air to re-enter above the piston by a throttle valve, while the speed could also be regulated by throttling the escape of the expelled air from below the piston. It is obvious that, neglecting the friction of the piston, any lifting capacity desired can be obtained, for a given vacuum, by merely increasing the diameter of the tube, while the speed of hoisting will depend on the capacity (size and speed) of the exhausting engine to maintain this vacuum.

Besides its legitimate function as a hoisting device, M. Blanchet was enthusiastic about the additional service it would perform in cooling and ventilating the mine through the introduction at each trip of the volume of air represented by the depth of the shaft and the diameter of the cylinder.

That the pneumatic system will be more exempt from accident than the cable system seems hardly probable in view of the want of a reliable, continuous system of recording the positions of the cage in the tube. The expense of the pneumatic system proper is given by M. Naugerode, the present superintendent, as follows: Tube and connections, $70,000; erection, including winch engine, &c., $74,000; exhausting engine (or vacuum pump), $42,000; total, $186,000. Thus far, in America, our hoisting practice, with few exceptions, is anything but creditable. We are behind European practice. But we can still very much exceed our present limits by counterbalancing the dead load, by using a smaller factor of safety for the rope, by the use of the best material for the rope and by designing the cage with a minimum of weight.

At the evening session an exhaustive paper was presented by James Douglas, Jr., New York, on the "Copper Resources of the United States."

A. Fteley, chief engineer of the new Croton Aqueduct, described in a very clear and entertaining way the principal features of that great work.

The paper by Eckley B. Coxe, of Drifton, Pa., was on the "New Iron Breaker at Drifton, with Remarks on the Preparation of Anthracite Coal." All of the above papers were illustrated with admirable lantern views.

A number of papers were also read by title at this session.

PERSONALS.

A. W. Walburn, of the Fort Scott Foundry and Machine Company, Fort Scott, Kan., has been very low for the past two months with typhoid fever, but is now much improved, and is in a fair way to recover.

Elliott Holbrook has been appointed superintendent of the Pittsburgh division of the Baltimore and Ohio Railroad, to succeed M. V. Patton, who resigned to accept the position of general manager of the Pittsburgh and Western Railroad.

Joseph Ingham, who has managed the puddling department of the Spang, Chalfant & Co.'s Etna mill for 25 years, has retired, and his place has been filled by Joseph Williams, one of his old puddlers. Mr. Williams for a short time managed the puddling forge in the mill at Kittanning, and his position there has been filled by his brother, Henry Williams.

A new system of torpedo defense has been devised by M. Salmaic, of the French Engineers. It is a series of nets made of steel cable wire one-fifth of an inch in diameter, and not only has it a high degree of resistance, but it possesses great flexibility. The whole apparatus for a large battle ship will weigh about forty tons. The nets are so arranged that they can be run out and extended by means of compressed air in about twenty seconds.

The Iron and Steel Institute.

On Wednesday morning at 9.30 the Iron and Steel Institute began its session at Chickering Hall. Sir James Kitson, Bart., president of the Institute, occupied the chair. A much larger audience than attended any of the meetings of the home engineers was present, the members of the Institute turning out in large numbers. The president introduced Mr. Andrew Carnegie, chairman of the American Reception Committee, who spoke as follows:

Mr. President and Gentlemen: Welcome, thrice welcome from the shores of the old land to the shores of the new. Speaking as a representative and on behalf of the various kindred societies of this country, I have now the pleasure of welcoming you as guests. To the members of the Iron and Steel Institute, and the members of the Verein Deutscher Eisenhuettenleute, and the gentlemen from the sister Republic of France, we extend both hands in cordial greeting and welcome. Many of the members of our societies have been privileged on more than one occasion to acknowledge your most generous hospitality. Wherever our members have gone they have been hailed not only as brother workers, not only as men, but as kinsmen. Mr. President, the debt which the new land owes to the old is freely acknowledged. In iron, coal and steel we have nothing whatever to show you but the development of your own ideas. The inventions there are all your own—you are the inventors of the processes which you are now to see in force in our country, and it is only by your inventions that the amazing developments of this country has been rendered possible. In mechanical and in civil engineering processes you will see something which may lead you to believe progress in these branches in the new land has not been inconsiderable. In bridge construction, and, most important of all, in the building and management and operation of railways, we hope you will see much that will interest you. One of your hosts is the Electrical Society. In electricity the new land had a fair start with Europe. Our electrical friends—Mr. Edison at the head—are most anxious to show you their latest achievements. Indeed, Mr. President and gentlemen, the whole continent is open for your inspection. The committee has been overwhelmed with invitations. While we gratify one, we shall give offense to twenty by not bringing you to them.

Manufacturing and commerce are conducted on a scale so vast that there is no longer any room for petty antagonism. The great desire of your hosts is that this visit may be of lasting benefit to all concerned. Gentlemen, our age is distinguished by one feature. It is an age of "firsts"—so many things are done during our age for the first time. We celebrate a "first" this morning. This is the first time that the Iron and Steel Institute has crossed the Atlantic to hold its annual meeting as the guests of its kindred societies upon this side, but it will not be the last. One hundred years from this perhaps you will celebrate the centennial of this meeting. How petty our land, our inventions, our discoveries, our manufactures, compared with what we shall be then! This land will, probably, then have more than 400,000,000 of citizens. Perhaps we may give you a three days' excursion across the continent, with electricity as the motive power.

Gentlemen, I have said that it is our wish that this visit may be of great material benefit. I should but poorly perform my office if I did not say that there is another wish in our hearts—we trust that by this visit many new friendships will be formed and many old ones cemented. We hope that you of the old land will come to know us better, and we of the new land to know you better. This is a peaceful Republic. No man here will uphold me in this statement better than my friend General Sherman, who I see before me. We hope that the principles of peace and goodwill will be promoted by this visit; that you will learn to think of your kindred here kindly, cordially, fraternally, and that we of this new land will learn to reverence still more the land of our fathers. Mr. President, my last words are my first words—Welcome, thrice welcome to the shores of the Republic.

Sir James Kitson replied to Mr. Carnegie's address of welcome, after which the regular business of the meeting was in order.

The Hon. Abram S. Hewitt, president of the American Institute of Mining Engineers, was to have opened the meeting by an address, but through illness was unable to be present. We print the address in another part of this issue. Owing to Mr. Hewitt's absence it was also impossible to carry out the plan of presenting to him the Bessemer gold medal.

After the reading of the minutes of the last meeting by Secretary Jeans, the president announced that the next business in order would be the election of a president for the ensuing two years. Sir Frederick Abel, who is president of the British Society and secretary of the Imperial Institute, was chosen by unanimous consent.

Mr. James Gayley, of Braddock, Pa., then read a paper on the "Development of American Blast Furnaces, with Special Reference to Large Yields." This paper is a very valuable one, and will be presented by us in a later issue.

CORRESPONDENCE.

The Annapolis Armor Trials.

To the Editor: You ask me what influence the Annapolis armor trials will have upon future naval construction, and what conclusions are most likely to be accepted as authority.

Their importance cannot be overestimated; for not only has a standard of armor plate been secured, but the preeminence of American high powered guns has been proved, the success of American powder assured, and the wonderful uniformity and excellence of the Holtzer projectiles demonstrated. The vast superiority of steel armor over British compound has been conclusively established. The United States and Italy will continue to protect their ships with steel armor, employing such steel mixture as will insure the greatest toughness and resistance.

To the English makers of compound armor the results should be of the greatest importance. Great Britain may look upon them as accidental until either Whitworth or Vickers presents plates that vanquish the Sheffield composite armor, for Cammell & Co. have too many clients in France, Russia and Germany to be suddenly forsaken by the home government. Or, if the British authorities deem that the results have been too marked to be passed unheeded, a bonus may be offered to the Sheffield makers themselves, to utilize their new forges and open hearth plants for the supply of steel armor.

It is not unlikely that Russia, although now making plates at Kolpino under the Wilson patents, will make an alliance either with Creusot or Bethlehem for the manufacture of steel armor.

Spain and other countries purchasing ships of great Britain, or having them built within their territory by builders interested in the English industries, will await Great Britain's change of policy.

After Schneider's splendid victory I cannot see how the French Government can avoid the adoption of steel armor for all her future battle ships, notwithstanding the protection mentioned in your issue of March 13, which that Government had to give to encourage the manufacture of a product at a time when it was supposed to be the most efficient.

Germany, the most progressive of nations in the production of offensive and defensive weapons, must change her policy and protect all her future constructions with steel. When you consider her early adoption of, and continued success with, steel breech loading rifles, it is the more remarkable that she ever consented to adopt the Cammell type of plate.

Many believe that these decisive results will be looked upon in England with indifference, and that the prejudiced accounts of interested parties will still be accepted.

For years British authorities have been indifferent to failures, but recently investigations have been as attractive as they are in this country. With armor, however, England has never had such a severe lesson, because Mr. Schneider, as stated in your issue of March 13th, would not allow his plates to enter into a British competitive trial unless he could have the benefit of success by fair public trial, and an order for his reward; but if British eyes have not yet been opened to the inferiority of her armor plating, she has had very instructive lessons in almost every other branch of war material, from "bayonets that bend" to gun steel that would "not stand the pressure."

The predictions of the New York *Herald* are far seeing, and must carry great weight. They were written by one whose early naval training, combined with his wide literary experience and habits of observation at home and abroad, eminently fit him to judge of results, and to predict their effect upon the public and official mind; but I hardly think Great Britain will go so far as that journal predicts. "Compound armor by the thousands of tons that now clings to the sides of existing battle ships must come off," or even so far as "compound armor in equal amounts now designed for English battle ships will never go on," but after the miserable failure of the Cammell plate, England's Director of Naval Construction would not dare to advocate the employment of British compound armor in future construction, unless on British soil he could secure in open impartial trial such a pronounced victory for compound iron and steel armor as that recently obtained by the steel plates of Creusot. This can only be attained by the impartial comparison so long avoided, if not denied, by England.

To me personally the results are most gratifying. The steel plates have not only kept out the projectiles which so readily perforated and demolished the Cammell armor, but the trials have proved beyond a question of doubt or argument the wisdom of the conclusions and recommendations of those boards whose opinions decided the system to be adopted by the United States and by that corporation which, by financial enterprise, energy and perseverance, and by wise administration and legislation, has been converted into one of the nation's most important national defenses. The *Tribune* well appreciates that no country can be considered defenseless which has an establishment possessing such vast resources for producing the materials of war.

W. H. JAQUES.

BETHLEHEM, September 30, 1890.

TRADE REPORT.

Chicago.

(*By Telegraph.*)

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, October 1, 1890.

A more cheerful feeling prevails among sellers. The remarkably heavy consumption is having its effect on foundrymen, who are not only making inquiries with a view to renewing contracts, but are, in some cases, placing orders for good quantities of Coke Iron. All indications point to a heavy business in October It is believed that the critical period is about over, and that with the advent of fresh orders the aspect of affairs will be decidedly brightened during the fall and early winter months. The foundries are very actively engaged, and promise to so continue for an indefinite time. Southern Coke Iron is recovering from its temporary weakness, partly on account of the better demand and partly by reason of the diminished output, forced by accidents at furnaces and the short supply of raw materials. Charcoal Iron is receiving a little more attention, and a renewed buying movement is expected at an early day from large consumers, whose requirements are known to be in excess of the present stock and contracts. Some Pig Iron sellers are sanguine of higher prices, but the trade generally looks forward to the maintenance of present values, which will be regarded in the light of an important triumph over the unfavorable conditions of the past 30 days. Quotations are as follows, cash, f.o.b. Chicago:

Lake Superior Charcoal	$20.00 @ $20.50
Local Coke Foundry, No. 1	17.00 @ 17.50
Local Coke Foundry, No. 2	16.00 @ 17.00
Local Coke Foundry, No. 3	15.50 @ 16.00
Bay View Scotch	18.00 @ ...
Am. Scotch (Strong Soft), No. 1	19.25 @ 20.25
Jackson County, Soft and Silvery, No. 1	18.25 @ 18.50
Southern Coke, No. 1	16.50 @ .....
Southern Coke, No. 2	16.00 @ .....
Southern Coke, No. 3	15.50 @ .....
Southern, No. 1, Soft	16.00 @ .....
Southern, No. 2, Soft	15.00 @ .....
Southern Gray Forge	15.00 @ .....
Southern Mottled	14.25 @ .....
Tennessee Charcoal, No. 1	19.00 @ .....
Missouri Charcoal, No. 1	18.50 @ .....
Alabama Car Wheel	22.50 @ 24.00

Bar Iron.—Manufacturers report an excellent condition of business. Numerous orders have come on the market within the past week, among them being one for 2000 tons of Car Iron. Prices have been moved up a trifle, the minimum rate now being 1.87½¢ for half extras, Chicago delivery, with most makers asking 1.90¢. The Mahoning Valley mills are firm at 1.75¢, at mill, but it transpires that some of them are ready to take business for any delivery at that price, which shows that they are not so pressed with work as they were a short time since. Jobbers' prices from here are unchanged.

Structural Iron.—The large contracts previously referred to are still in abeyance, but the mills are very busy on old orders and making heavy shipments. Prices steady, but the following quotations prevail on carload lots, f.o b.: Angles, 2.35¢ @ 2.40¢; Tees, 2.90¢ @ 3¢; Beams, 3.20¢; Universal Plates, 2.45¢ @ 2.55¢; Sheared Plates, Iron, 2.50¢ @ 2.60¢; Steel, 2.60¢ @ 2.70¢; Beams sell from store in small lots at 3.70¢, but Angles and Tees at 10¢ @ 15¢ ℔ 100 above carload prices.

Plates, &c.—Dealers continue to report a heavy volume of business, and stocks are somewhat broken. Prices are firm. We quote: Nos. 10 to 14 Iron Sheets, 2.90¢ @ 3¢; do., Steel, 3¢ @ 3.25¢: Tank Iron, 2.65¢ @ 2.75¢; Steel, 2.85¢ @ 2.95¢; Shell Steel, 3.25¢; Flange Steel, 3.50¢; Fire Box Steel, 4.50¢; Rivets, 4¢ @ 4.25¢; Norway Rivets, 40 % off; Tubes, 1¼ inch and less, 40 % off; 2 to 4½ inch, 50 % off; larger, 52½ % off.

Sheets.—Mill orders for Black Sheets are rare at present. Manufacturers are beginning to see daylight on their contracts, and will soon be looking for business. They quote November at 3.05¢ @ 3.10¢, at mill. Jobbers are selling large quantities of Black Sheets, but their rush will not occur until after one or two sharp frosts. They quote 3.30¢ @ 3.40¢ for No. 27 Common.

Galvanized Iron.—Some of the largest makers are now wholly out of the market, finding it impracticable to take more business. Stocks are very light throughout the city, especially for standard sizes. Small lots of Juniata are quoted at 62½ % off, with sales becoming easy at 60 %.

Merchant Steel.—Large consumers have now covered their wants for the remainder of the year, and the market is quiet, except for small lots from store, which are now aggregating a good volume of business in themselves. Tire Steel, 2.50¢ @ 2.75¢; Open Hearth Spring, 2.75¢ @ 3¢; Open Hearth Machinery, 2.50¢ @ 2.75¢; Bessemer Machinery, 2.30¢ @ 2.40¢; Crucible Spring, 3.50¢; Tool Steel, 7¢ and upward; Crucible Sheets, 7¢, 8¢ and 10¢.

Steel Rails and Fastenings.—The Rail market locally is in good condition, with sales reaching a satisfactory aggregate from week to week at $33.50 @ $34. Some inquiry is noted for Rails for delivery next year, but thus far no orders have been taken. The active demand for Splice Bars continues, and makers now ask 2.15¢ @ 2.20¢ for Iron and 2.25¢ @ 2.30¢ for Steel. Track Bolts with Hexagon Nuts are firm at 3.15¢, and Spikes, 2.20¢ @ 2.25¢.

Old Rails and Wheels.—A very quiet week is reported, with old Iron Rails nominally quoted at $26.75 @ $27. Old Steel Rails, $18.50 @ $19 for short pieces and $21 @ $22 for long pieces; Old Car Wheels, $18.75 @ $19.25. The quotation on Car Wheels last week was a typographical error.

Scrap.—Quite a difference of opinion prevails with regard to the course of the market. Some dealers report lower prices and indications of an oversupply of material, while others maintain that the consumption is too great to expect any material decline. Dealers quote selling prices per net ton as follows: No. 1 Railroad, $21.50 @ $22; No. 1 Forge, $21; Car Axles, $27; No. 1 Mill, $16.50; Pipes and Flues, $15.50; Horse Shoes, $19.50; Light Iron, $11; Machinery Cast, $13.50; Cast Borings, $9.25; Wrought Turnings, $13; Fishplates, $24; Mixed Steel, $13.75; Coil Steel, $17; Leaf Steel, $18; Tire Steel, $19

Pig Lead.—Dealers report a small week's business, not from lack of demand, but for lack of Lead. The aggregate of sales is put at 400 tons. It opened at 5¢ and advanced to 5.20¢, with a tendency to a still higher range.

Cincinnati.

(*By Telegraph.*)

Office of *The Iron Age*, Fourth and Main Sts., CINCINNATI, October 1, 1890.

Pig Iron.—Free buying and a stronger tone have been the most prominent features of the local market during the past week. The total sales have aggregated about 30,000 tons, mainly of No. 3 Foundry and Gray Forge. The largest Southern companies have booked orders for round amounts for forward delivery to such an extent that they have withdrawn from the market, except at higher prices, and many of the smaller stacks, also well sold ahead, are inclined to follow the advance. The firmer feeling has hastened large buyers to market, and prompted the covering of short sales to a liberal extent, which have only increased the confidence of the furnaces, and one of the largest sellers to-day refused to grant concessions on 12,000 tons No. 3 Foundry Gray Forge at $11 and $10.50 ℔ ton respectively. One purchase of 1700 tons of the above grades is reported to have been made last week on a basis a little below the figures quoted here, but during the current week no shading has been indulged in by producers. Mottled Iron is especially scarce, and the demand for it urgent. The largest companies in the South are sold ahead on this grade for five months. There has been a moderate movement of Charcoal Iron and a steady consumptive inquiry for Ohio Softeners, but no transactions of moment. Southern furnaces are finding the cost of production greater rather than less. Advices from mills, foundries and other industrial works are most encouraging; orders are liberal and the margin of profit considerable, and an advance in Pig Metal seems to be assured in the near future. We quote for cash, f.o.b. Cincinnati, as follows:

Foundry.	
Southern Coke, No. 1	$15.25 @ $15.75
Southern Coke, No. 2	14.25 @ 14.50
Southern Coke, No. 3	13.75 @ 14.00
Ohio Soft Stone Coal, No. 1	17.00 @ 17.50
Ohio Soft Stone Coal, No. 2	16.00 @ 16.50
Mahoning and Shenango Valley	17.50 @ 18.00
Hanging Rock Charcoal, No. 1	21.00 @ 22.00
Hanging Rock Charcoal, No. 2	19.50 @ 20.50
Tennessee and Alabama Charcoal, No. 1	18.00 @ 19.00
Tennessee and Alabama Charcoal, No. 2	18.50 @ 19.50
Forge.	
Gray Forge	13.25 @ 13.50
Mottled Neutral Coke	13.00 @ 13.25
Car Wheel and Malleable Irons.	
Southern Car Wheel	22.50 @ 23.25
Hanging Rock, Cold Blast	22.00 @ 22.50
Lake Superior Car Wheel and Malleable	21.00 @ 22.00

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., September 30, 1890.

The close of the month shows no important change in the condition of the Iron market, and on the whole the position may be considered one of moderate prosperity. Prices are about the same as they were a month ago, with the exception of Steel Rails, and Steel Billets, which are $1.50 ℔ ton lower than they were at that time. Skelp Iron during the same period shows an advance of about $2 and Merchant Bars about $1 ℔ ton, all other articles being firm at unchanged prices. So far as the immediate outlook is concerned, things are in a most satisfactory condition, orders being abundant, stocks small and prices fairly remunerative. The impression is that the present activity will be maintained to the close of the year, but there is no probability of any material change in prices, although there is a feeling of nervousness and unrest in business circles that is not altogether encouraging. Production has reached a point beyond all precedent, and while the market so far has absorbed everything without difficulty, it cannot do so indefinitely. Something of a reaction will doubtless be met with sooner or later, but the trade are so well prepared for it that at the worst it cannot be much more than a heavy, sagging market. This is not in sight yet, however, and so long as consumption can be maintained as at present such a contingency is by no means imminent.

Pig Iron.—The market holds firm at prices recently ruling, offerings being not more than consumers seem to require. Considering the immense production it is a matter of constant remark that one wonders what becomes of all the Iron. But it is a fact that there is no more appreciable surplus than there was a few years ago,

when the supply was not more than one-third what it is to-day. Moreover, if the trade was anything like as timid as it was in former times, when the surplus was as small in proportion as it is to-day, prices would be very much excited, and a good deal higher than they now are. But consumers have abiding confidence in an ample supply, and, as many of them say, "if prices are going higher, we can stand it." Such conditions make a very steady market, as there is an entire absence of speculation and no stocks piled up in anticipation of higher prices. Hence when the turning point does come, and it will come sooner or later, no violent reaction in prices is possible, simply a "sagging off" until production is curtailed in proportion to the demand. Whatever may be later on, there are no present indications of such an event. As a matter of fact, there are some well informed parties who believe in a little advance before the close of the year, but no one speculates on such a contingency. Makers sell their output at current prices about as rapidly as it is made, and consumers are equally willing to take what they want for the time being, leaving the future to take care of itself. Prices ruling during the week have been from $17.50 to $18.25, delivered, for No. 1 Foundry; $16.50 @ $17 for No. 2, and $15 @ $15.50 for Gray Forge. There is very little Iron of any kind to be had at less than the inside figures, and some of the favorite brands are held with much firmness at the outside quotation, the supply being barely adequate to the demand, although there is nothing to indicate any quotable change in prices for the present at all events. There is some talk of new brands being offered at 50¢ less than our lowest quotation, but it is probably only for carload lots as sample.

Bessemer Pig.—There is nothing doing, and prices are entirely nominal at about $18.50, at furnace, for standard qualities. High grade Bessemer is also nominal at about $21.50, at furnace. Deliveries on old contracts are being rapidly called for.

Spiegel and Ferromanganese.—Business is quiet in these specialties, the demand being very languid and buyers and sellers a good way apart in their ideas of value. For 20 % Speigel $31 @ $31.50, duty paid, is asked, and for 80 % Ferro $69 @ $70, but buyers only pay these figures for small lots to cover immediate requirements.

Steel Rails.—Dullness is the most prominent feature at present. Large lots are not called for, but small orders are sufficiently numerous to keep things moving at about $31, at mills, although very liberal concessions would be made if such a course would be likely to secure contracts for winter work. Mills are quite busy, nevertheless, as they have a good deal of stuff to deliver during October and November, so that there is no immediate reason for complaints.

Steel Billets.—The market is unsettled and irregular, but is not quotably lower than it was a week ago. There is a good deal of inquiry, which manufacturers are anxious to meet on satisfactory terms, but it is difficult to arrange matters to suit both sides. Sellers quote $31.50, delivered, for Nail Slabs, and $32 for 4 x 4 Billets, but buyers talk $1 ℔ ton less than these figures, but those who require to place orders soon will probably agree on a compromise. Sales this afternoon reported at $31, delivered, for Nail Slabs.

Muck Bars.—Holders are very unwilling to make concessions, and in many case $30 at mill is given as a firm inside quotation. Consumers are equally unwilling to meet these figures, and in several instances have secured a few lots at $30, delivered, although the supply is extremely limited. The tendency, however, is slightly in buyers' favor, and it will be difficult to place any quantity at present asking prices.

Bar Iron.—The demand is steadily maintained and mills are full of work. Manufacturers report that buying is from all classes of consumers, and the urgency for deliveries shows that material is being absorbed with great rapidity. Prices are firm, with very few sellers at the inside figure, work being so abundant that manufacturers feel that there is no necessity for immediate business unless at prices that suit them. The usual quotations are 1.85¢ @ 1.90¢ at city mills, and 1.75¢ @ 1.80¢ at mills in the interior. A meeting of manufacturers was held here last week for the purpose of arranging a uniform classification of extras, but nothing definite was decided upon except to appoint a committee to further consider the subject.

Skelp Iron.—Mills are so crowded with work that it is almost impossible to place an order for early delivery. Asking prices for such are 2.05¢ @ 2.10¢ delivered, for Grooved, and 2.20¢ @ 2.25¢ for Sheared, with small lots taken at medium figures for delivery during October. For a later period inside rates would doubtless be accepted for a desirable order, but the demand is chiefly for October and November deliveries.

Plates.—There is no change from the position noted for several weeks past. Mills are all busy, some crowded with work to the end of the year, others full in some departments, while in others they are open for business. Prices are, therefore, a little irregular, but on the whole firm at the full rates quoted a week ago, but in other cases, for reasons already mentioned, concessions of $\frac{1}{10}$¢ or so are not unusual. Lots delivered in consumers' yards may be quoted as follows:

	Iron.	Steel.
Ship Plates	2.25 @ 2.30¢	2.40 @ 2.50¢
Tank	2.25 @ 2.30¢	2.40 @ 2.50¢
Bridge Plate	2.30 @ 2.40¢	2.50 @ 2.60¢
Shell	2.45 @ 2.55¢	2.60 @ 2.70¢
Flange	3.10 @ 3.20¢	2.90 @ 3.00¢
Fire-Box	3.75¢	3.75 @ 4.25¢

Structural Iron.—There are no new features, nor is there likely to be for some time, as mills have all the work they can handle for a long while to come. New business is chiefly confined to small lots, for which prices delivered in consumers' yards are about as follows: Angles, 2.20¢ @ 2.30¢; Sheared Plates, 2.40¢ @ 2 50¢, and from 10¢ to 20¢ more for Steel, according to requirements. Tees, 2.7¢ @ 2.8¢; Beams and Channels, 3.1¢ for either Iron or Steel.

Sheet Iron.—Demand is very active at full quoted rates. This applies to both light and heavy sheets, as mills are full of orders, and hard pushed to make deliveries as promptly as required. Carload lots quoted about as follows:

Best Refined, Nos. 14 to 20.....3.00¢ @ 3.10¢
Best Refined, Nos. 21 to 24.....3.20¢ @ 3.30¢
Best Refined, Nos. 25 to 26.....3.40¢ @ 3.50¢
Best Refined, No. 27.....3.50¢ @ 3.60¢
Best Refined, No. 28.....3.60¢ @ 3.70¢
Common, ¼¢ less than the above.
Best Soft Steel, Nos. 14 to 20.....3¼¢ @ 3½¢
Best Soft Steel, Nos. 21 to 24.....3⅝¢ @ 3¾¢
Best Soft Steel, Nos. 25 to 26.....3¾¢ @ 3⅞¢
Best Soft Steel, Nos. 27 to 28..... @ 4⅛¢
Best Bloom Sheets, 1-10¢ extra over the above prices.
Best Bloom, Galvanized, discount..... @ 60 %
Common, discount.....60 @ 65 %

Old Rails.—There is a fair demand for Rails at interior points, for which holders quote $26.50, with bids of $26 at mills near by and sales at $26.25. Small lots to arrive in Philadelphia are offered at $26, but there is not much demand at over $25.25 @ $25.50, although if any one happens to need such lots at time of arrival they would probably bring a little more money.

Scrap Iron.—There is a pretty fair demand for Scrap and all grades sell at about the following prices, viz.: No. 1 Railroad Scrap, $22.50 @ $23; No. 1 Wrought, $21 @ $21.50, Philadelphia, or for deliveries at mills in the interior $22 @ $22.50, according to quality and point for delivery; $15.50 @ $16 for No. 2 Light; $16 @ $17 for best Machinery Scrap, $15 @ $15.50 for ordinary, $15.50 @ $16.50 for Wrought Turnings, $11 @ $11.50 for Cast Borings, $26 @ $28 for Old Fish Plates, and $17 @ $18 for Old Car Wheels.

Wrought Iron Pipe.—There is nothing specially new in this department. The mills are taxed to their utmost capacity to fill orders, but are unable to meet requirements as promptly as desired. There is much activity in the retail trade. Discounts firm as follows: Butt-Welded Black, 47½ %; Butt-Welded Galvanized, 40 %; Lap-Welded Black, 60 %; Lap-Welded Galvanized, 47½ %; Boiler Tubes, 1¼ inches and smaller, 45 %; 2 inches and larger, 50 %; Oil Well Casings, 50 %.

The Chester Rolling Mill Company have issued the following:

THURLOW, PA., September 30, 1890.

This company hereby announces to its friends and the trade generally that the name of the corporation will be changed on October 1, to "Wellman Iron and Steel Company." The capital has been increased from $600,000 to $1,000,000. The officers of the new company will be as follows: S. T. Wellman, president; Wm. G. Neilson, vice-president; John P. Crozer, treasurer; Richard Peters, Jr., secretary. The general office of the company will be at Thurlow, Pa., with a branch office at No. 335 Walnut street, Philadelphia, Pa., a private wire connecting the two.

St. Louis.

OFFICE OF *The Iron Age*, 214 N. Sixth st., ST. LOUIS, September 27, 1890.

Pig Iron.—Trade during the past week has been confined to small lots. This, however, was expected, as the week preceding had been an unusually lively one, and a continuance of the demand such as then existed could not be expected. Notwithstanding the dullness prices have been fairly well maintained, and furnace men are disposed to hold firm at present prices. Consumption continues to increase, and the question is often asked, Where does all the Iron go to? It is enough, however, that it finds its way into various channels. Local industries are all enjoying an unusually brisk trade. The stove foundries, machine shops, architectural foundries, pipe works, &c., are well supplied with orders, and indications point to a continuance of this activity for an indefinite period. It is difficult to place an order for any quantity of No. 1 Foundry, on account of the scarcity, and $16 f.o.b. cars at St. Louis is quoted, although it is questionable whether a furnace could be found to accept this figure and guarantee prompt shipment. Ordinarily there is only 50¢ ℔ ton difference between No. 1 and No. 2 Foundry, whereas to-day there is a full dollar per ton difference, which is likely to remain so as long as the scarcity continues. The general situation shows some improvement during the past few days, and much depends on the action of the furnacemen regarding concessions. At the moment they are disposed to lose business rather than shade prices, and with any kind of fair demand the chances are quite favorable for a steady adherence to present prices, and it is thought by some that a higher range of values will result. Sales have been light, but, as stated above,

prices are firmly maintained. We quote as follows for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry,	$15.75 @ $16.00
Southern Coke, No. 2 Foundry,	14.75 @ 15.00
Southern Coke, No. 3 Foundry,	14.25 @ 14.50
Gray Forge	13.75 @ 14.00
Southern Charcoal, No. 1 Foundry	17.75 @ 18.25
Southern Charcoal, No. 2 Foundry	16.75 @ 17.25
Missouri Charcoal, No. 1 Foundry	16.75 @ 17.25
Missouri Charcoal, No. 2 Foundry	16.00 @ 16.50
Ohio Softeners	17.75 @ 18.50

Bar Iron.—The market continues in the firm condition which we have reported for the past two or three months. Mills are so well supplied with orders that they are placed in an independent position, and it is well nigh impossible to place an order for a large block of Iron and get prompt shipment. There seems to be no end to the demand, and as most of the mills in this locality have their books well filled, it seems quite probable that the present price will be advanced. Local mills quote 1.95¢; jobbers quote from 2.05¢ to 2.10¢ from store.

Barb Wire.—There is a fair amount of business being transacted, and prices are, generally speaking, satisfactory. Occasionally a local mill is called upon to meet an extremely low quotation, which, upon investigation, is generally found to emanate from outside mills or from jobbers who do not pretend to sell Barb Wire at a profit. Stock in jobbers' hands are not very heavy, and a steady trade from this time on is anticipated. We quote as follows: Painted, 2.90¢ @ 2.95¢; Galvanized, 60¢ additional. Carload lots, 10¢ ₱ cwt. less than above prices.

(By Telegraph.)

The movement in Pig Iron is restricted to sales of small lots, the only transaction of any moment is the sale of 500 tons of No. 1 Foundry at $15.75, f.o.b. cars St. Louis. The demand for Barb Wire has fallen off somewhat, and 2.85¢ for carload lots, f.o.b. St. Louis, is quoted as bottom. Wire Nails are quoted at $2.55, 2 % off for cash.

Cleveland.

CLEVELAND, September 29, 1890.

Iron Ore.—The receipts of Ore at lower lake ports up to date aggregate 6,050,000 tons, as compared with 5,200,000 tons at a corresponding period last year. Contrary to expectations, the margin between the totals for the two years is again increasing, vesselmen evidently experiencing less difficulty than heretofore in obtaining Ore at Upper Lake Superior harbors. The output thus far this season is divided between the ranges about as follows: Gogebic range, 1,870,000 tons; Marquette range, 1,970,000 tons; Menominee range, 1,520,000 tons; Vermillion range, 690,000 tons. As has been steadily maintained in these reports and as vigorously disputed elsewhere, the prospects are excellent for a handsome gain over last season's shipments. Nothing but an unusually sudden termination of the navigation season can prevent this result. Lake freights are now low enough to satisfy shippers, while the demand from the furnacemen is continual. In the way of sales there is very little to record—a few thousand tons of Bessemers, not very high in phosphorus and averaging about 62 % in Iron, having been let go at $5.70, f.o.b. vessels Cleveland. Ore receipts are heavy, about 60,000 tons having been unloaded on the local docks during the past week. There is a rumor afloat that early shipments of grain from the Northwest will soon cause an advance in lake freights, although Ore charters are still going at $1 from the head of Lake Superior and 85¢ from Escanaba.

Pig Iron.—The market is even more lifeless, if that is possible, than for several weeks just gone by. There is absolutely nothing new to record beyond a continuation of the weakness noted during the past month, and a slight demand for Mill and Foundry Irons at prices so entirely out of proportion to those obtained for all Manufactured Irons that they are not even announced. Pig stocks are disappearing, and herein lies the hopes of the furnacemen. It is not considered possible that with the present rate of consumption continuing for another month prices for Pig Iron can be kept so discouragingly low. Indeed, the hoped for revival is looked for early in October.

Manufactured Iron.—The tone of the market is remarkably firm and prices are stronger than ever. There is an enormous demand for Muck Bar at $30 @ $30.50, while Common Bar at 1.80¢ is selling even more rapidly than it can possibly be produced. The whole market is in a most healthy condition.

Old Rails.—Prices are up to $28 @ $28.50, with the latter figure nearer the price actually paid when transactions occur. Although this price is acknowledged to be outrageously high, it is recognized as but one of the many unique features now characterizing the whole Iron market.

Scrap.—No. 1 Wrought is strong at $22 @ $22.50 and Wrought Turnings at $14.50 are in good demand. Car Axles are quoted at $28 and Old Wheels at $18 @ $18.50.

New York.

Office of *The Iron Age*, 66 and 68 Duane street, NEW YORK, October 1, 1890.

American Pig.—The general situation is practically the same as outlined last week. Consumers do not appear to be buying with greater freedom at all events, nor are there any signs of increased pressure to sell, and, apart from Iron that cuts an unimportant figure in this market, there are no signs of anything bordering upon weakness. There is an accumulation of about 7000 tons of two Pennsylvania brands, for which prices on the basis of $17.50 for No. 1 at tidewater would doubtless be accepted, and some Southern Iron of doubtful quality is also offered at what would appear to be rather low figures. Popular makes are well sold up, however, and prices for the same remain very steady. Low Grade Foundry and Mill Iron are barely steady. We continue to quote $17.50 @ $18 for No. 1 and $16 @ $16.50 for No. 2 Foundry, good Northern brands, while Southern Irons are selling at $17 @ $17.25 for No. 1, $16 @ $16.25 for No. 2 and $14.75 @ $15.25 for No. 3. Southern Car Wheel Iron is quoted $20 @ $21 for Nos. 3, 4 and 5 and $19.50 @ $20 for Nos. 1 and 2, delivered.

Spiegeleisen and Ferromanganese.—There has been no business of sufficient volume to fairly test the market nor any signs of change in the position of buyers or sellers. Twenty per cent. Spiegeleisen is nominally $30.50 @ $31.50, as to brand; 80 % Ferromanganese is said to have been sold recently at $69, laid down in Baltimore, but $70 @ $72 is quoted at present.

Billets.—Quotations of as low as $29 @ $29.50 at Western Pennsylvania mill have been made, and corresponding figures named further East, without important business. Nothing was reported in the way of movement of foreign Billets, prices for which are relatively higher than those current for domestic.

Wire Rods.—Domestic are said to have been sold at $42 at mill, and $43 is considered full value Foreign cost about $2 more to import, and, as a matter of course, find very limited sales.

Structural Iron and Steel.—There is still a very fair amount of business under way. Mills are well employed and prices remain steady at 2.25¢ for Universal Mill Plates, delivered; 2.10¢ @ 2.25¢ for Angles; 2.60¢ @ 2.70¢ for Tees, and 3.1¢ for Beams.

Steel Rails.—An Eastern mill has booked an order for 6000 tons for the Delaware and Hudson Railroad, but no particulars as to prices are divulged. Apart from this only small sales come to notice, and orders of a desirable character are few. A good deal of business could be done were manufacturers content to take securities of more or less doubtful character in payment for Rails. Prices for standard sections range between $30 @ $31, at mill.

Old Rails.—Iron Tee Rails are in some demand at $25, and inquiries the past few days indicate that $25.50, on cars, would be paid. Sellers stand out for $26, as a rule, however, and very little business goes through.

Metal Market.

Pig Tin.—The outstanding September contracts were wound up on Tuesday with little excitement. In some instances settlements were not quite as satisfactory as might have been desired, and in others a round premium was paid for a few days' grace to secure supplies from vessel that arrived rather tardily. However, affairs have taken somewhat different shape since the turn of the month. With a fair amount of supply to work upon dealers have sold at irregular prices for delivery this month and next, as, for example, single ton lots at 24¢ for prompt and 23¾¢ for delivery later this month. London prices have yielded somewhat also, and, with heavy shipments from the Straits during the last week of September, more ample supplies are calculated upon in some quarters. Cable advices to the Metal Exchange report total shipments of 2725 tons from the Straits last month, of which 1300 tons were to Great Britain, 950 tons to America and 500 tons to the Continent. This quantity is no more than the average monthly consumption, and the opinion prevails in some quarters that supplies will be very little, if at all, easier this month than they were in September, and that economy is the only safety against another "squeeze." On Wednesday the market was very irregular, with lower cables from London rather puzzling. Five ton lots could probably have been had at 23¾¢ @ 24¢, from store, and October delivery at 22½¢, net cash, but all quotations were in a great measure "nominal."

The statistical position and movement last month as posted on the Exchange was as follows:

Movements in September.

Shipments.	1890.	1889.	1888.
Straits to Great Britain..	1,300	1,450	1,300
Straits to America.....	950	520	750
Straits to Continent....	500	....	....
Total.....	2,750	1,970	2,050
Australia to Great Britain	400	430	525
America.....	100	100	....
Total.....	3,250	2,500	2,575

Stock of Tin.

	Sept. 1, '90.	Oct. 1, '90.	Oct., 1889.
Foreign in London.....	3,553	2,640	4,462
Second hands in Holland..	1,990	2,030	2,070
In America, estimated....	1,200	800	350
Total export.....	5,743	5,470	6,882
Afloat for London.....	1,684	2,230	2,722
Afloat for Holland.....	1,620	1,300	1,200
Afloat for America.....	1,850	2,750	2,200
Total afloat.....	5,154	6,280	6,122
Visible supply.....	11,897	11,750	13,004

Copper.—The mining companies, to all accounts, are firm at 17¢ for Lake Superior product, but small outside lots have been available at 16⅞¢, and could probably be secured at that price at this writing. The raid upon Copper mine shares and the break of nearly £2 in price of Merchant Bars in London evidently causes some uneasiness among outside holders. Arizona remains at 15½¢ @ 15¾¢, and the range of 14½¢ @ 14¾¢ is still quoted for casting brands. Operations have been on a moderate scale during the week, and the demand is moderate at the present time, consumers evidently have sufficient supply for this month under contract.

Pig Lead.—Domestic has been sold in carload lots at 5¼¢ @ 5.40¢ here, which prices are now generally quoted, and in the St. Louis market there has been an advance to 5.15¢. Offerings are reserved, and the available supply for prompt delivery is represented as being moderate. The high cost of domestic Lead has resulted in the purchase of considerable foreign, chiefly for delivery in November and December, at 5.20¢ @ 5.25¢. Since these purchases were made prices have advanced in the Europran market, however, and it is doubtful that purchases can be duplicated at the prices quoted. As to the extent of the dealings in foreign Lead, estimates are variable, some placing the total at 2500 tons, while others make it only one-half that amount.

Spelter.—Prime Western for early delivery has been sold at 5.70¢ @ 5.75¢, showing a further rise in value, and offerings at present are very reserved, with 5.80¢ upward asked.

Antimony.—Outside of the ordinary jobbing trade there has been little movement and prices are still rather in buyers' favor, with 19¼¢ quoted for Hallett's, and 21¼¢ for Cookson's.

Tin Plate.—Purchases for future delivery have been on a rather smaller scale the past week, and the demand for spot lots has been of merely routine character. The general market preserves a fairly strong tone, however, and full former prices are maintained all along the line. Quotations for large lots on the spot are as follows: Coke Tins—Penlan grade, IC, 14 x 20, $5.25; J. B. grade, do., $5.30; Siemens Steel, $5.50; Bessemer do., $5.25. Stamping Plates—Bessemer Steel, Coke finish, IC basis, $5.25; Siemens Steel, IC basis, $5.37½; IX basis, $6.37½. IC Charcoals—Calland grade, IX, ——; Melyn grade, $6.12½; for each additional X add $1.50; Allaway grade, $5.50; Grange grade, $5.65; for each additional X add $1. Charcoal Ternes—Worcester, 14 x 20, $5.50; 20 x 28, $11; M. F., 14 x 20, $7.75; do., 20 x 28, ——; Dean 14 x 20, $5; do., 20 x 28, $10; D. R. D. grade, 14 x 20, $4.85; do., 20 x 28, $9.87½; Mansel, 14 x 20, $4.90; do., 20 x 28, $10; Alyn, 14 x 20, ——; do., 20 x 28, ——; Dyffryn, 14 x 20, ——; do., 20 x 28, $10.50; Wasters—S. T. P. grade, 14 x 20, $4.50; do., 20 x 28, $9.25; Abercarne grade, 14 x 20, $4.45; do., 20 x 28, $9.25.

New York Metal Exchange.

The following sales are reported:

THURSDAY, September 25.

20 tons Tin, September.....24.80¢

FRIDAY, September 26.

10 tons Tin, September.....24.70¢

The trade will observe that the Perfection Meat Cutter, manufactured by the American Machine Company, Philadelphia, for whom John H. Graham & Co. are agents, 113 Chambers street, New York, is illustrated on page 92, where attention is called to its special features and advantages.

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, PITTSBURGH, September 30, 1890.

Pig Iron.—There is a fair amount of activity. We quote prices as follows:

Neutral Gray Forge	$14.75 @ $15.25,	cash.
All Ore Mill	15.75 @ 16.25,	"
White and Mottled	14.25 @ 14.50,	"
No. 1 Foundry	17.00 @ 17.50,	"
No. 2 Foundry	16.00 @ 16.50,	"
No. 3 Foundry	15.50 @ 16.00,	"
No. 2 Charcoal Foundry	21.50 @ 22.00,	"
No. 1 Charcoal Foundry	23.00 @ 23.50,	"
Cold Blast Charcoal	27.00 @ 30.00,	"
Bessemer Pig	17.50 @ 18.00,	"

Standard brands of Mill Iron may be fairly quoted at $15 @ $15.25, cash; other brands 25¢ to 50¢ less. While we hear of no sales of Bessemer under $18, cash, a block of 5000 tons is said to have been offered at $17.75, cash, and it is intimated that an offer to buy at $17.50, cash, would be accepted. It is claimed that the furnaceman cannot do as well with Bessemer at present prices as he did a year ago, when it was $1.50 to $2 per ton less, as the cost of Ore is so much greater.

Muck Bars.—Notwithstanding the hot season is over, there is no abatement for Muck, and prices are holding steady. We now quote $30.50 @ $31, with sales for delivery during the next two or three months at $30.65. This largely increased demand is owing in great part to an apprehension on the part of mill owners of a scarcity of gas this winter. A number of mills at Wheeling in the Shenango and Mahoning Valleys are under contract to make Muck Bar during the greater part of the winter for Pittsburgh consumers, who, as already noted, are apprehensive of a shortage of gas. Indeed, a number of the mills here are having trouble from that cause.

Ferromanganese.—We are advised of small sales of 80 % domestic at $73 @ $73.50, Pittsburgh. Foreign is being offered at $69.50 @ $70, at seaboard, but consumers generally prefer the domestic, which they can get in small quantities without loss in wastage, as is the case with foreign, which loses considerably while in transit.

Manufactured Iron.—Good demand, but not as much new business as there was last month, but the mills are all very busy, and it will be some time before they will be able to clear their order books. Prices on Merchant Iron remain as last quoted: Bars, 1.85¢ @ 1.90¢; Plate and Tank, 2.20¢ @ 2.25¢; No. 24 Sheet, 2.85¢ @ 2.90¢, 60 days, 2 % off for cash. Skelp Iron is higher, and it is next to impossible to place an order for immediate or near by delivery. We now quote Grooved at 1.85¢ @ 1.90¢, and Sheared at 2.15¢ @ 2.20¢. Mills making Skelp Iron are oversold, and they are being pressed on every side by those with whom they have contracts. However, this is usually the busy season, but the Skelp mills probably never were pushed to such an extent as at the present time.

Nails.—Steel Cut Nails are quoted at $1.85 @ $1.90, 60 days, 2 % off for cash, and trade is reported dull. There is not much doubt but what most of the business is on the inside quotation. The Eastern Nail Association fixed the price of Iron Nails at $1.90, delivered at Pittsburgh, but with Steel Nails at the same price or less it is not likely that there will be many Iron Nails sold to come to this market. Wire Nails are still quoted at $2.35, 60 days, 2 % off for cash, in car lots, but it is intimated that they can be bought for less.

Wrought Iron Pipe.—There are not so many new orders, but the mills are all as busy as they can be, and some of them are a good deal annoyed by a shortage of gas. Prices firm but unchanged. Discounts on Black Butt Weld 47½ %; on Galvanized ditto, 40 %; on Black Lap Weld 60 %; on Galvanized Lap, 47½ %. Boiler Tubes, 1¼-inch and smaller, 45 %; 2-inch and larger, 50 %. Casing, all sizes, 50 %. The regular monthly meeting of the Association takes place on October 8.

Structural Iron.—There is nothing particularly new to note; mills are all very busy and likely to be for some time to come, as they are all behind with their orders. Prices remain unchanged: Angles, 2.25¢; Beams and Channels, 3.10¢; Tees, 2.80¢ @ 2.85¢; Steel Sheared Bridge Plates, 2.65¢ @ 2.70¢; Universal Mill Plates, Iron, 2.35¢; Refined Bars, 1.90¢ @ 2¢.

Steel Plates.—The activity noted for some time past continues. Mills are working up to their full capacity and prices firm but unchanged, as follows: Fire Box, 4.25¢ @ 4.75¢; Flange, 3.10¢ @ 3.20¢; Shell, 2.90¢; Tank, 2.50¢ @ 2.55¢.

Merchant Steel.—There is a steady demand, but no recent change in prices. Tool Steel, 8¢ and upward, as to quality and brand; Crucible Machinery Steel, 4.75¢ @ 5¢; Open Hearth Steel, base sizes, 2.75¢ @ 3¢; Bessemer Machinery Steel, 2.35¢ @ 2.40¢; Tire Steel, 2.50¢ @ 2.55¢ rates.

Wire Rods.—The weakness noted in our last report continues and prices have further declined. We now quote at $41.50 @ $42, cash, at makers' mill. However, there are but few lots offering for sale, for the reason that the three firms making them are all consumers, and for the time are using about all they can make. The decline in price is being caused by the decline in the cost of Billets.

Billets and Slabs.—The demand for Billets continues light and prices are weak and drooping. We now quote at $29 @ $29.50. It is stated that the Allegheny Bessemer Company, owing to the scarcity of orders for Rails, are now on the market as a seller of Billets, and this has not been without its effect on the market. Nail Slabs about the same in price as Billets.

Old Rails.—There have been no sales reported the past week, in the absence of which we continue to quote at $28 @ $28.50. The demand for some time past has been almost wholly from mills in the Shanango and Mahoning valleys. A Pittsburgh firm bought some 10,000 tons a couple of months or more ago, when prices were much lower than at present. Old Steel Rails may be quoted at $21 @ $22 for short and long pieces.

Railway Track Supplies.—Demand good and prices steady as quoted. Spikes $2.20, 30 days, on cars at makers' works; Splice Bars, $1.95 @ $2.05; ditto Steel, $2 @ $2.10. Track Bolts, $2.85 with Square and $3 with Hexagon Nuts.

Steel Rails.—There has been but little new business reported recently, in consequence of which the market is weaker. While $31 on cars at works is the price generally quoted, there is not much doubt that a desirable order could be placed at $30. However, both of the mills here are well sold ahead, but the price is naturally drifting in sympathy with Bessemer Pig.

Old Material.—A fair business, but no important change in prices, with the exception of Iron Axles, the demand for which has increased considerably, owing to the scarcity of Muck Bar. We quote prices as follows: No. 1 Railroad Wrought Scrap, $22.50 @ $23, net ton; No. 2 Yard do., $20 @ $20.50; Old Iron Axles, $28.50 @ $29.50; small lots for immediate delivery, $31 @ $32; Cast Railway Scrap, $15.50 @ $16, gross; Steel Rail and Bloom Ends, $21 @ $21.50; All Steel Springs, $21.50 @ $22; Old Iron Car Wheels, $18.50 @ $19; Railway Leaf Steel, $22 @ $22.50, net;

Crucible Scrap Steel $27 @ $28, net; Old Locomotive Tires, Steel, $23 @ $23.50, net; Cut Boiler Steel $22.50 @ $23; Cast Iron Borings, $12.50 @ $13, gross; Wrought Turnings, $14.50 @ $15, net.

Connellsville Coke.—There is a continued scarcity of cars and operators are complaining a deal by reason thereof. Reports come from different furnacemen that unless they get more Coke they will be obliged to bank up their furnaces. There is no scarcity of Coke, all that is wanted is transportation. No change in prices.

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, October 1, 1890.

Under the influence of sales to realize, caused by rumors that an early settlement of the labor troubles is probable, together with aggressive action by the "bear" interest, prices for Scotch warrants receded to 52/1. Cleveland warrants dropped to 48/6 in sympathy and Hematites to 59/. The rumor appears to have been without foundation, however, and the market is looking quite firm again. Thus far 15 furnaces have been damped, and a complete stoppage during the present month is considered probable. On Wednesday's operations Scotch Warrants moved up to 53/, Cleveland to 47/6 and Hematites to 59/9, the market closing strong.

Pig Tin on the spot has dropped to £101/. 15/ after selling at over £104, and futures are also rather lower since the settlement of outstanding accounts and cessation of buying for American accounts. Heavy shipments from the Straits have also induced freer selling although still insufficient for probable requirements.

Copper is weaker. Prices for Merchant Bars have dropped to £59.5/ under the influence chiefly of realizations, due to dearer money. Purchases for consumption continue on a fairly large scale.

The Tin Plate market is steady. Makers are fully engaged, largely for American account, and offer sparingly. New works are building at Briton-ferry. The dispute at the Llanelly Works has been settled in favor of the workmen.

Dealers report a larger movement in Old Iron Rails and large sales are said to have been made at 67/6 for American account.

Scotch Pig Iron.—The market is very unsettled, with prices irregular but generally higher.

No. 1 Coltness,	f.o.b.	Glasgow	66/6
No. 1 Summerlee,	"	"	63/6
No. 1 Gartsherrie,	"	"	64/
No. 1 Langloan,	"	"	66/
No. 1 Carnbroe,	"	"	56/
No. 1 Shotts,	"	at Leith	65/
No. 1 Glengarnock,	"	Ardrossan	62/
No. 1 Dalmellington,	"	"	57/
No. 1 Eglinton,	"	"	53/6

Steamer freights, Glasgow to New York, 2/, nominal; Liverpool to New York, 7/6.

Cleveland Pig.—Prices have fluctuated widely and the market is unsettled, with Makers' brands quoted to-day at 49/6 for No. 3 Middlesborough, f.o.b.

Bessemer Pig.—A fairly active demand has prevailed, and the market continues very firm. West Coast brands, Nos. 1, 2 and 3, quoted 59/6, f.o.b. shipping port.

Spiegeleisen.—The demand continues good and prices remain firm. English 20 % quoted at 100/, f.o.b. shipping port.

Steel Rails.—There is more business and the market is stronger, with prices rather higher. Heavy sections quoted at £5.2/6 and light sections £5.17/6 @ £6, f.o.b. at N. W. England shipping point.

Steel Blooms.—Business fair and prices firm at a slight advance. Makers quote at £4.18/9 for 7 x 7, f.o.b. at N. W. England shipping point.

Steel Billets.—There is little movement, but prices are firmly held. Bessemer, 2½ x 2½ inches, £5, f.o.b. at N. W. England shipping point.

Steel Slabs.—Prices are steady and the demand is fair. Bessemer quoted at £5, f.o.b. at N. W. England shipping point.

Old Iron Rails.—Sellers are very firm and the demand is moderately active. Tees quoted at £3. 2/6 @ £3. 5/ and Double Heads £3. 5/ @ £3. 10/, f.o.b.

Scrap Iron.—A moderate business passing at old prices. Heavy Wrought quoted at £2. 7/6, f.o.b.

Crop Ends.—There is little doing and prices remain unchanged. Bessemer quoted at £3. 2/6 @ £3. 7/6, f.o.b.

Tin Plate.—Higher prices prevail, and the market is strong at the advance with demand good. We quote f.o.b. Liverpool:

IC Charcoal, Alloway grade	17/6 @ 18/
IC Bessemer Steel, Coke finish	16/3 @ 16/6
IC Siemens " " "	16/6 @ 16/9
IC Coke, B. V. grade	16/ @ 16/3
Charcoal Terne, Dean grade	15/3 @ 15/6

Manufactured Iron.—No changes in prices have taken place, and the market continues fairly active. We quote, f.o.b. Liverpool:

	£	s.	d.		£	s.	d.
Staff. Marked Bars				@	9	0	0
" Common "	7	2	6	@	7	7	6
Staff. Bl'k Sheet, singles	7	17	6	@	8	0	0
Welsh Bars (f.o.b. Wales)	6	5	0	@	6	7	6

Tin.—The market rather dull at the close and prices unsettled. Straits sold at £101. 10/, spot, and £99. 10/ for three months futures.

Copper.—With slower demand the market is rather weak. Merchant Bars quoted at £59. /5, spot, and £59.17/6 three months futures. Best Selected, £67.

Lead.—A large business has been done and the market is strong. Quoted at £14. 5/ @ £14. 7/6 for Soft Spanish.

Spelter.—The demand is fair and prices are steady. Quoted at £25 @ £25. 5/ for Ordinary Silesian.

Louisville.

LOUISVILLE, KY., September 27, 1890.

Pig Iron.—The Pig Iron market has been rather dull during the past week. There has been but little trading so far as the local market is concerned, and there are no new features of interest to report. Owing to the great demand for cars to move the cotton crop, there is a dearth of cars for other purposes, and furnaces are complaining very considerably, not only on account of being unable to ship sufficient Iron on pressing orders from consumers, who find that they are using a comewhat larger quantity than they expected, but on account of their inability to get a sufficient supply of coke; in fact, some furnaces have been compelled to bank for lack of fuel. While there are not a great number of inquiries, there is no disposition on the part of furnaces to shade prices, and we quote the same as last week:

Southern Coke, No. 1 Foundry	$14.75 @ $15.25
Southern Coke, No. 2 Foundry	14.25 @ 14.75
Southern Coke, No. 3 Foundry	13.75 @ 14.25
Southern Coke, Gray Forge	13.25 @ 13.75
Southern Coke, Silver Gray	14.00 @ 15.00
Southern Charcoal, No. 1 Foundry	17.50 @ 18.50
Southern Car Wheel, Standard Brands	22.50 @ 23.50

The American Stove and Furnace Company, Limited.

It is officially announced that after no little negotiation the Magee Furnace Company and the Smith & Anthony Stove Company, of Boston, Mass., have passed into the control of an English syndicate, known as the American Stove and Furnace Company, Limited, which is incorporated under the Companies acts of Great Britain and Ireland of 1862 to 1886. The share capital amounts to £250,000, and the debenture capital, bearing 6 per cent. interest, to £125,000. According to the prospectus of the new company the plant of the Magee Furnace Company, involved in their purchase, covers an area of 116,463 square feet of land, upon which are located 20 buildings, most of which are constructed of brick. The buildings consist of molding, casting, plating, fitting and inspecting departments, as well as warehouses, boiler and machinery houses. These are fireproof and are lighted throughout by electricity. The plant of the Smith & Anthony Stove Company is located at Wakefield, near Boston, and comprises 5 acres of land, having a frontage of 648 feet on railway, on which are erected 18 buildings equipped with modern machinery, tools, patterns, &c., together with a recently added brass foundry and Morandi business. The land and buildings of the two companies have been appraised by experts at $390,012.90, and the machinery, tools, patterns, flasks, &c., at $514,500, making a total valuation of $904,172.90.

The prospectus of the new company gives the net profits of the two companies named for the year ending December 31, 1887, as $158,243.43; for the year ending December 31, 1888, as $172,457.42, and for the year ending December 31, 1889, as $186,029.19. The Maverick National Bank of Boston is the American banker of the new company, and the City Bank (Limited), of London and all its branches the foreign bankers. The trustees for debenture holders are the American Loan and Trust Company, of Boston. Frank A. Magee, superintendens of the Magee Furnace Company; Edgar W. Anthony, treasurer of the Smith & Anthony Stove Company; Albert N. Parlin, treasurer of the Magee Furnace Company, and Asa P. Potter, president of the Maverick National Bank, Boston, have agreed, if required by the directors, to act as members of the Committee of Management in Boston for a period of three years, and the services of the present staff will be retained as far as needful. The old established firm of James Allen, Sr., & Co., iron founders, of the Vulcan and Victoria Wharves, Upper Thames street, London, have agreed to act as agents for the company in Great Britain. The offices of the new company will be at 34 Union street, Boston, and 8 Old Jewry, London. The secretary *pro tem.* is Herbert R. Duke.

The New German coinage for East Africa consists principally of silver pieces besides coins in copper and bronze.

Accidents in the Pennsylvania coal mines last year were of appalling frequency. The inspectors' reports show that there were 490 fatal and 1296 serious accidents.

HARDWARE.

Condition of Trade.

The New York market continues in excellent condition, and reports from manufacturers and jobbers indicate a very satisfactory trade. In several lines there is some difficulty in obtaining goods as promptly as desired, owing to the pressure of orders on manufacturers' books. Changes in price have been comparatively few, and most of these indicate a firm tone in the market. Collections are generally reported as good. The special reports from leading Hardware centers as given below indicate, it will be observed, an excellent condition of things throughout the country at large.

Chicago.

(*By Telegraph.*)

The Shelf Hardware trade is not only up to the average for the season, but appears to be on the increase. All kinds of goods are in demand. Prices show no material change, except in Lead and Tin and their products. Shot has advanced to $1.47 per sack at factory. Bar, Plate and Pipe Lead are up 1 cent per pound, and Solder is correspondingly high. Tin Plates cannot be bought for spring delivery at less than jobbers' present selling prices, and as the advance so far is only half the increase in duty under the new tariff, it is reasonable to expect a still further upward movement. Heavy Hardware jobbers report their business in excellent condition, with good prospects. Collections are very fair.

St. Louis.

Business in this department is in a fairly satisfactory condition. There have been a number of large buyers in the market during the past week, and many more will be here in the course of the next ten days, as the festivities will then be in full swing. These merchants usually make arrangements to be here, and generally place their orders for fall and winter supplies at this time. Hence the Hardware trade is unusually brisk just now. There is no complaint regarding prices, which are as a rule well maintained. The demand for Wire Nails continues to increase, and Barb Wire is also in good demand. Seasonable goods, such as Fruit Jars, Meat Cutters, &c., are moving quite freely. Collections keep up to the average, and the outlook is considered extremely satisfactory from all points of view.

Portland, Ore.

Foster & Robertson.—No changes of importance have taken place in Hardware circles in the Northwest during the last two weeks, but trade, we are pleased to say, has been steadily on the increase. Our packing floors have been constantly covered, and our clips well filled with untouched orders, in the make up of which honors are about evenly divided between our travelers and mail orders. While this state of affairs is highly gratifying, yet it is nothing but what might be expected in a country whose walls and fences are placarded with innumerable calls for common laborers at $2.25 per day, and where new enterprises are held back only by the impossibility of securing the necessary forces to carry on the same. Within the next few days the great Exposition of the North Pacific Industrial Association will be opened up here, and for the next 30 days thousands of people from all over the Pacific Northwest will be in attendance upon this wonderful exhibition of Western enterprise, filling our streets with activity and bustle, and crowding our many hotels to their utmost capacity.

San Francisco.

Huntington-Hopkins Company.—As we anticipated in our last report, business has improved quite materially since the people have gotten over the festivities attendant upon the celebration of Admission Day, and orders are now coming in rapidly, both from travelers and also from dealers direct. We anticipate that this state of affairs will continue until the rainy weather sets in. Collections have been good, the stringency in the money market in the East having had no perceptible effect upon us.

St. Paul.

Farwell, Ozmun, Kirk & Co.—The volume of trade for the past two weeks has not been up to our expectations. The weather has been bad, so that farmers could not thresh or market their grain, and as a consequence the country merchants are doing very little business. The same causes operate to make collections poor, but with good weather, which is likely to follow, now that the Equinoctial is past, trade in all branches must revive. Stocks are light, as all merchants have been holding off from buying for the past few months, awaiting the result of the crops, which is now assured, and as prices for all country produce are ruling high, there is bound to be more money in the country than for some years past, so that we look for busy times as soon as the crop moves.

Louisville.

W. B. Belknap & Co.—Since sending in our last report a large volume of business has been maintained, and up to the present writing shows no signs of falling off. The demand for all kinds of goods, considering the absence of speculative feeling, is almost unprecedented. Great difficulty is experienced in getting the manufacturers to ship what they have agreed to ship, and also in securing anything like reasonably prompt delivery from the railroads. This is more particularly true of the goods over the Northern lines, but almost equally so over the Pennsylvania routes. It is not uncommon for lots which used to reach here in five to seven days at the outside, taking now anywhere between two and three weeks, and sometimes longer. This means an immense amount of confusion and annoyance. It is more expensive, too, as it necessitates for urgent orders the doubling up of specifications and purchase at higher price, by reason of prompt delivery. Bar Iron has been advanced in this section about $2 per ton within the last week or ten days. Sheet Iron in the lighter gauges here is in comparatively good supply. The railroads are all well crowded with work and building operations especially active.

Omaha.

Lee-Clarke-Andreesen Hardware Company.—We have to report a still further increase in the demand for the full line of Hardware. House Furnishing specialties, Coal Hods, Stove Boards, Stove Pipe, Elbows, Tinware, Hollow Ware, &c., are being shipped out in large quantities. The shortage of crops noticed in former reports being sectional only, has no appreciable effect on the general volume of traffic. Prices as a rule are well maintained. Disturbing elements now appear to be realizing the situation. The advancing tendency of many lines of goods, together with the active demand, is always a powerful incentive to uphold legitimate margins and check the too great eagerness to secure business at profitless prices. Advices bearing on the monetary situation are almost uniformly more cheerful. The stringency of a few weeks since has apparently disappeared "in the gloaming," and we think no further fears need be entertained from this important quarter. The prices of all kinds of cereals and stock are substantially maintained, and, for a season at least, prosperity seems to reign supreme. We indulge in the hope of its continuance.

Cleveland.

The W. Bingham Company.—All the jobbers here, we think, will close their September sales showing a volume of business quite in excess of that done for the same month last year. Seasonable goods, such as Stove Boards, Elbows &c., are having a remarkable sale, notwithstanding the largely advanced prices on the former, and there seems to be less cutting than usual. The market on staple Hardware is strong. The immense demand for manufactured Iron of all kind continues, and prompt filling of orders from the mills is out of the question. Prices, therefore, are stiff, and it is a continual surprise they are no higher. The demand for Wire not quite so brisk as two weeks ago; prices rule the same. The wire nail mills are catching up with their orders and are therefore not quite so "stiff in the bitt." Nails are quoted from stock at $2.50 and 10 cents less for carload lots. New price for Carriage Bolts adopted in this market. Retail trade all over the city was never better. The money market a little easier than it was, but there is still room for improvement. Collections fair.

Philadelphia.

Supplee Hardware Company.—The month of September just closed shows a healthy condition of trade throughout the country. There is no diminution of prices. All parties can see that goods are low, and all know there will be no lower prices, as a

rule, during the balance of the season. Manufacturers are slow in filling orders on many styles of goods, and at this late date jobbers who have not ordered their full line are likely to be disappointed in securing many kinds of goods for immediate sales. The month just closed shows a volume of trade quite equal to any preceding month of the year. There is quite a feeling of relief from the fact of the tariff agitation coming to an end. This is about the only matter that has unsettled customers throughout the country, and had it been at any other time than that trade was specially good, the long delay in bringing this matter to a close would have materially affected trade; as it is, there will be a feeling of relief throughout the country. Whether goods are likely to advance, or goods likely to decline under a change in tariff, it always unsettles matters, and correspondence from many customers say they hope this thing will not occur again for the next ten years to come. The stringency of the money market has softened very materially since our last report.

Baltimore.

CARLIN & FULTON.—The rush of trade with the far South which began earlier this year, being stimulated by very forward crops is about over, and now the heaviest demand for goods for some time will be principally from the nearer markets. The building of furnaces, mills, and factories, the development of mines and the general booming of Virginia towns should cause a large demand for Hardware in that State, but we fear that the excitement which prevails there will injure its agricultural interests; many being tempted to exchange the monotonous occupation, and possibly slow gains of farming for the tempting opportunities of real estate speculation. From all that we can learn, two of the great staples, cotton and tobacco have this year proved most satisfactory crops to the planters, and when marketed cannot fail to have beneficial results on business during the balance of this year.

The advanced cost of such raw materials as are affected by new tariff regulations is having its effect on many lines, while such goods as cannot hereafter be imported are firmly held by those fortunate enough to have stocks. We note a firmer tone to the Nail market and continned advances in Shot and Bar Lead; but little changes in other domestic goods to report.

Wire Nails.

There has been no important change in the condition of the market, but there are indications of a greater desire on the part of manufacturers to secure orders, and the market is perhaps a shade weaker. It is understood that some lower prices than those recently prevailing have been named. The general quotations, however, remain on the same basis as last week, $2.40 to $2.45, at mill, for carload lots.

The following is our special telegraphic report of the **Chicago** Wire Nail market: The course of the Wire Nail trade has been the important feature of the week. It is reported that new mills came into the market and offered inducements to secure business, which for a time caused a weak feeling and created the appearance of a slump in values. Having secured such orders as were wanted, they retired and the market recovered. The old mills are quite firm in price, and quotations from factory range from $2.45 to $2.50, Chicago. Jobbers quote Wire Nails at $2.60, with usual discount for carloads.

Cut Nails.

The New York market for Cut Nails, both Steel and Iron, remains without change. The price recently made of $1.90 for Iron and $2 for Steel, at dock, has been well maintained, a deduction of 10 cents per keg being made for round lots, at mill. Small lots from store are quoted $2 for Iron and $2.10 for Steel.

Our advices from **Chicago**, received as we go to press, are to the effect that Steel Nails have shown no special change since our last report, but rule at about $1.75, at mill, for usual specifications. Jobbers hold them at $2, with the usual discount for carloads.

Barb Wire.

There has been no change in the situation since our last report. The demand is only moderate, but the market is characterized by a fairly firm tone. Quotations are on the basis of 3.30 cents per pound for four-point Galvanized, at mill, but it is thought that desirable orders might be placed at concessions from this figure.

The **Chicago** Barb Wire market is thus referred to in our special telegraphic advices: Manufacturers report a slight improvement in the demand, but for the past week trade has not been heavy. They are not accumulating much stock of Barb Wire in their warehouses, preferring to stock the plain Wire. Jobbers quote Painted at 2.9 cents and Galvanized at 3.5 cents, in small lots, and report very little demand for carloads.

Miscellaneous Prices.

There is no important change in the Auger and Bit market, and prices are characterized by some unevenness, there being, as usual, some disparity in the quotations made by different manufacturers. The general condition of the market, however, is referred to as fairly satisfactory, and some signs of improvement are reported.

The upward movement of Shot under the influence of the high price of raw material and the combination between the manufacturers continues, and since our last issue there have been two advances. Under date September 26 the following advanced prices were announced, subject to a discount of 2 cents per bag of 25 pounds if paid within five days from receipt of bill:

Drop Shot, per 25-pound bag	$1.52
Drop Shot, per 5-pound bag	.36
Buck and Chilled Shot, per 25-pound bag	1.77
Buck and Chilled Shot, per 5-pound bag	.41
Dust Shot, per 25-pound bag	2.25

Another advance was made September 26 to the following figures, which are subject to the usual cash discount:

Drop Shot, per 25-pound bag	$1.56
Drop Shot, per 5-pound bag	.36
Chrilled and Buck Shot, per 25-pound bag	1.81
Chilled and Buck Shot, per 5-pound bag	.41
Dust Shot, per 25-pound bag	2.25

F. A. Reiher & Co., 72–88 South Market street, Chicago, issue under date September 1 the reduced price-list of their patent Transom Lifters which we print below. The discount on Bronzed Iron Rods is 50 and 10 and 10 and 2 per cent., and the discount on Brass, Bronzed Metal or Nickel Plated Rods is 30 per cent.:

		Bronzed Iron Rod.			Real Bronze and Nickel Plate.	
	Length of Lifter.	Diameter of Rod.			Diameter of Rod.	
		¼	5/16	⅜	¼	5/16
No. 101	3 feet	$0.50	$0.80	.....	$1.90	$2.40
No. 101½	4 "	.60	.90	$1.25	2.20	2.70
	5 "	.70	1.00	1.40	2.30	3.00
	6 "	.85	1.10	1.55	2.60	3.30
	7 "	1.00	1.20	1.70	3.10	3.60
	3 feet	$0.70	$1.15	.....	$2.65	$3.10
No. 201	4 "	.80	1.25	$1.70	2.90	3.40
No. 301	5 "	.90	1.35	1.90	3.15	3.70
	6 "	1.00	1.45	2.10	3.40	4.00
	7 "	1.10	1.55	2.30	.....	.....

Carter & Co., Scranton, Pa., have increased their output of Axes and are working full time. They intimate that buyers of 25 to 50 dozen, as well as larger jobbers, will find it to their interest to correspond with them.

The following are the prices of the Stove Polish, Varnish, &c., manufactured by Yates & Co., Rockford, Ill., no charge being made for packages or drayage:

Yates' Superior Liquid Stove Polish, 2 gallon cans, per gallon	$0.80
Yates' Superior Liquid Stove Polish, 3 gallon cans, per gallon	.70
Yates' Superior Liquid Stove Polish, 5 gallon cans, per gallon	.60
Yates' Superior Liquid Stove Polish, 10 gallon cans, per gallon	.50
Yates' Superior Liquid Stove Polish, ½ pint bottles, per dozen	1.20
Yates' Superior Liquid Stove Polish, ½ pint bottles, ½ gross lots, per dozen	1.10
Yates' Superior Liquid Stove Polish, ½ pintbottles, 1 gross lots, per dozen	1.00
Yates' Nonpariel Stove Varnish, 5 gallon cans, per gallon	.40
Yates' Rust Proof Varnish, 2 gallon cans, per gallon	.80
Yates' Rust Proof Varnish, 3 gallon cans, per gallon	.70
Yates' Rust Proof Varnish, 5 gallon cans, per gallon	.60
Yates' Rust Proof Varnish, 10 gallon cans, per gallon	.50
Yates' Standard Paste Stove Polish, 10 pound cans, per pound	.12½
Yates' Standard Paste Stove Polish, 50 pound cans, per pound	.10
Yates' Brightine (Nickel Polish), 3 ounce bottles, per dozen	1.20
Yates' Prepared Stove Putty, 10 pound cans, per pound	.10
Yates' Prepared Stove Putty, 50 pound cans, per pound	.08
Yates' Indestructible Fire Proof Stove Lining, 50 pound bags, per bag	.75
Yates' Indestructible Fire Proof Stove Lining, 100 pound boxes, per box	1.50
Yates' Indestructible Fire Proof Stove Lining, 400 pound barrels, per pound	.01¼
Pure Ceylon Lead, very finely ground, 5, 10 and 25 pound boxes, per pound	.10

The following are revised quotations on some of the Egg Beaters, Coat and Hat Hooks and Broilers made by Hamblin & Russell Mfg. Company, Worcester, Mass.:

Standard Coat and Hat Hooks, discount			60 %
Double Egg Beaters,	No. 0,	per gross	$12.00
" "	No. 1,	"	15.00
" "	No. 2,	"	36.00
Easy "	per gross		12.00
Triple "	No. 1,	per gross	16.50
Improved Acme, per gross			9.00
Spiral Egg Beaters, per gross			4.50
Standard Broiler, discount			60& 5 %
Corrugated "	"		70 %
New Heavy "	"		55 %
Oyster "	"		55 %

The American and the United Glass companies control two-thirds of the Glass produced in the United States, the American Company controlling 800 pots and the United Company 300 pots. This covers the entire territory except the Glass factories in New Jersey, Baltimore, and one in Massachusetts. Under the new arrangement the manufacturers sell only in carloads, and only to jobbers. The market price for Glass at the present time, as quoted by jobbers, is 80 and 5 per and cent. to 80 and 10 per cent., either in large or small quantities. American and French Window Glass are sold from the same list, the one in use having taken effect February 12, 1890. Indications are that there will be no further change in price until October 15, at which time an adjourned meeting will be held by the two Glass companies already named. The price at which Glass will be sold after that date is uncertain. We understand the Glass workers have made arrangements for another year, or, more correctly speaking, from September to next June or July, when the factories go out of blast. French Window Glass is quoted from the present list at 75 and 10 per cent. in any quantity, with advancing tendencies, with an additional 5 per cent. discount when 50 boxes are ordered and taken within a calendar month. The average cost of importation has been 106 per cent.

The tendency toward higher prices is due to the increased duties. The new tariff rate advances all glass over 24 x 36 one quarter of a cent a pound, to be paid for at actual weight. It has been the custom to consider a square foot of glass as weighing a pound, it being of no advantage to the importer or consumer if this weight varied one way or the other. Duties now have to be paid upon the quantity of glass as invoiced, whereas all broken glass has been valued only at the sized lights that could be cut from the broken ones.

The Carriage Bolt market is in a very satisfactory condition, prices being regularly maintained. The recent advance has been accepted by the trade as reasonable and is being adhered to. There is not as much complaint of irregularities as sometimes and the combination is regarded as working very satisfactorily.

Machine Bolts, Lag Screws, &c., are also in good condition and are held at slightly higher prices than have recently been ruling. There has been no formal advance in the prices of these goods, but a healthy stiffening without concerted action among the manufacturers.

Strap and T Hinges are in a slightly better condition than a week ago and there is slight recovery from the extreme prices then prevailing. The improvement is, however, not very marked and prices are still referred to as very low.

There is no agreement as to price between the manufacturers of Scythes, and the goods are offering at some diversity of quotations and at figures which are regarded by the manufacturers and the trade as low. Disappointment is expressed by some jobbers in the present condition of this line, as some orders were placed in anticipation of higher prices to result from concerted action by the manufacturers. This, however, has not been brought about. It is, however, generally conceded that stocks are light and the production moderate, and it is accordingly thought that higher prices may be realized before long. Well informed parties express the opinion that the retail trade have carried over less than the usual amount of goods. It will be well for buyers of Scythes to carefully scrutinize the list prices, as there is some diversity in the prices of different manufacturers, and the discount named does not always indicate the price of the goods.

The leading manufacturers of Clothes Wringers have united in adopting a new list giving advanced prices on the goods. This is owing to the advance that has taken place in the price of Rubber, which, we are advised, has been such as to prevent manufacturers from furnishing Wringers at prices which have recently ruled and give the same quality of rubber roll. The advance which has thus been made is indicated in the following list of the Bailey Wringing Machine Company, Woonsocket, R. I., the prices given being subject to a discount of 2 per cent. for cash in ten days. On shipments of 100 pounds or over freight will be allowed to all the leading jobbing points East of and including Chicago and St. Louis:

Names and Numbers.	Length of Roll. Inches.	Per dozen.
Superior Wringers, Iron Frame and Steel Springs:		
No. 2, Small Family Size	10	$20.00
No. 3, Medium Family Size	11	24.50
No. 4, Large Family Size	12	29.00
No. 5, Small Hotel Size	14	38.00
Novelty Wringers, with Curved Clamp:		
No. 2, Small Family Size	10	24.00
No. 3, Medium Family Size	11	29.00
No. 4, Large Family Size	12	34.00
No. 22, Large Family Size	10	34.00
No. 33, Ex. Large Family Size	11	43.00
No. 44, Small Hotel Size	12	52.00
Novelty Wringers, with Straight Clamp:		
No. 2½, Small Family Size	10	24.00
No. 3½, Medium Family Size	11	29.00
No. 4½, Large Family Size	12	34.00
No. 22½, Large Family Size	10	34.00
No. 33½, Ex. Large Family Size	11	43.00
No. 44½, Small Hotel Size	12	52.00
Novelty Wringers, Iron Swing Clamp:		
No. 10, Small Family Size	10	24.00
No. 11, Medium Family Size	11	29.00
No. 12, Large Family Size	12	34.00
No. 20, Large Family Size	10	34.00
No. 30, Ex. Large Family Size	11	43.00
No. 40, Small Hotel Size	12	52.00
Excelsior Wringers, with Folding Bench:		
No. A, Small Family Size	10	43.00
No. B, Medium Family Size	11	48.00
No. C, Large Family Size	12	53.00
No. AA, Large Family Size	10	53.00
No. BB, Ex. Large Family Size	11	62.00
No. CC, Small Hotel Size	12	71.00
Excelsior Wringers, for Stationary Tubs:		
No. E, Small Family Size	10	34.00
No. F, Medium Family Size	11	39.00
No. G, Large Family Size	12	44.00
No. EE, Large Family Size	10	44.00
No. FF, Ex. Large Family Size	11	53.00
No. GG, Small Hotel Size	12	62 00
Excelsior Wringers, Laundry and Factory:		
No. H, Medium Hotel Size	12	99.00
No. HH, Large Hotel Size	14	126 00
No. JJ, Laundry or Factory	16	261.00
No. KK, Laundry or Factory	18	351.00
No. 00, Laundry or Factory	14	441 00
No. 000, Laundry or Factory	18	987.00

G. & M. Nolin, Skowhegan, Maine, have lately reduced the price of their Hay Knives, the quotation now being from $7 to $8 per dozen. They report very satisfactory sales of their All Steel Grass Hooks.

Richardson Bros., Newark, N. J., announce the withdrawal of all special quotations and net prices on narrow Triumph Crosscut Saws and Wood Saws, and state that all future orders for these goods will be subject to list prices and discounts given in their discount sheet of January 1, 1889.

Enterprise Mfg. Company, Philadelphia, refer to the recent price of their Star and Toy Sad Irons as netting them a loss, and they have accordingly advanced the list to the figures named below, which are subject to a discount of 50 and 5 per cent.:

No.		Per doz. Irons.
70, Nickel Plated,	Either Nos. 1, 2 or 3	$9.00
71, "	" Nos. 1, 2 or 3	9.00
72, "		9.00
75, Plain Polished,	either Nos. 1, 2 or 3	6.75
76, "	" Nos. 1, 2 or 3	6.75
77, "		6.75
100, Nickel Plated,	weighs 2 pounds	6.25
105, Plain Polished,	" 2 "	4.75
110, Nickel Plated,	" 14 ounces	4.50
115, Plain Polished,	" 14 "	3.75
120, Nickel Plated,	" 5 "	2.50
125, Plain Polished,	" 5 "	1.75

Items.

The announcement of the American Screw Company, Providence, R. I., of the sale of their property in Hartford is deserving the attention of those who are desiring such an investment or of securing such a plant. A full description of the property with illustration is given on page 60. It will be seen that the total area of the land exceeds 3 acres, and that the factory buildings, which are substantial structures, have a floor space of 38,000 square feet. These buildings are now occupied for manufacturing purposes, and return an income of about $10,000 per annum. The property is now offered at private sale, but if not disposed of by October 20 will be sold at auction on that date. Those who are interested in the matter will note the further particulars given in the advertisement.

William J. Lloyd Mfg. Company, Philadelphia, in their advertisement on page 93, illustrate their Great American Meat Cutter, and also show a Stuffer Attachment. The trade will also observe on page 556 the description given of this machine, referring especially to recent improvements.

We would direct the attention of manufacturers and wholesale merchants to the special notice on page 66, in which a well-known business man now occupying a responsible place announces his desire for a position as secretary or treasurer, preferably in a manufacturing enterprise, his address being "New England," care of this office.

Syracuse Forging and Gun Company, Batavia, N. Y., among the Special Notices on page 65 advertise for several skilled workmen, one who understands making forging dies and others to make punch dies, milling machine cutters and fixtures. It is stated that steady work will be given to good men.

Our attention has been called to the exposition of the North Pacific Industrial Association, which is being held in Portland, Ore., having opened on September 25 and closing October 25. The exposition of 1889 is referred to as having been the largest and the finest affair of the kind that has ever been known on the coast,

and as being worthy a city of 250,000 people; yet in many respects it fell far short of what is proposed for the exposition of 1890. Foster & Robertson, Hardware merchants, of Portland, have been influential in furthering the plans of these expositions, and to them we are indebted for the foregoing information.

The trade will be interested in the advertisement on page 81, in which C. E. Jennings & Co., 79 and 81 Reade street, New York, illustrate their line of Saws, and state that they have purchased the entire plant of the Port Jervis Saw Works, including the real estate, machinery and tools. They are thus in a position to execute orders for Hand, Panel, Compass, Keyhole, Kitchen and Butcher Saws.

The Stanley Rule and Level Company announce the sale of 15,000 "Stanley's Odd Jobs," so called, up to this date. And in their advertisement this week they repeat the statement often made by mechanics who use this tool: That with it to use upon a rule, only a Hammer, a Saw and perhaps a Plane are needed to do any ordinary jobbing.

THE AUSTRALIAN EXPORT TRADE.

Those who have watched the steady development of our trade with Australia are impressed with the importance of that market as an outlet for the productions of our manufacturers.

Australia has an area nearly equal to that of the United States. Its population is a little over 4,000,000. Its people are generally prosperous, and are chiefly engaged in mining, agricultural and pastoral pursuits. There is comparatively little manufacturing done at present.

The consuming capacity of its people is evidenced by the fact that in 1888 the imports were over $284,000,000. This is exclusive of New Zealand and Tasmania.

The major portion of this amount represents imports from the United Kingdom and Europe, the proportion from this country being relatively small. There are, of course, a number of manufactures which cannot be exported advantageously from this country, but a glance at the subjoined list will show conclusively that our exports embrace a varied class of goods, which is capable of much greater extension with a little push on the part of our manufacturers.

The growth of our export trade has been relatively vigorous during the last few years, due in a large measure to the increased interest manifested by a few of our more enterprising manufacturers in the possibilities of that market.

It is undoubtedly true that the home market is the mainstay of manufacturers, but the increased production has more than outstripped the demands of the domestic trade, and manufacturers are being confronted more and more with the patent fact that production has either to be restricted or steps taken to find an outlet for their surplus stock. Occasional depressions in the home market accentuate this condition of affairs, which would be largely remedied by having a foreign trade to fall back upon, thus enabling factories to be kept running without cessation during the temporary stagnation.

The value of the Australian trade is further hightened when it is taken into consideration that the seasons of the two countries are diametrically opposed to each other—when it is summer here it is winter there, and *vice versa*. The demand, therefore, for seasonable goods from that country would dovetail in with a slack season here. For instance, agricultural implement orders, say, would reach manufacturers after the home demand had been satisfied. In this connection it is interesting to note the development of the trade in agricultural implements, especially in plows. The colonial farmers are gradually beginning to recognize the superior merits of the American style of plow over the English patterns, which have hitherto been in general use.

Another point to be borne in mind is that all foreign purchases are made upon a cash basis. Then there are no expenses attaching to the manufacturer in respect to travelers, advertising, &c., after the trade is secured, unless for catalogues or descriptive circulars for general distribution by the Australian dealers.

Australia is composed of five separate colonies—Queensland, New South Wales, Victoria, South Australia and West Australia—each under separate local governments and with diverse tariffs. The average duty approximates 15 per cent. ad valorem. The same duty is levied upon English as on American or other goods.

The trade between the United States and Australia is conducted principally through commission houses on this side and resident buyers, the purchasing commission being paid by the buyers. Among the commission houses doing an Australian business the following may be mentioned as prominent:

W. H. Crossman & Bro.,
77 Broad street, New York.
Arkell & Douglas,
17 Whitehall street, New York.
Henry W. Peabody & Co.,
58 New street, New York.
Coombs, Crosby & Eddy,
78 South street, New York.
Strong & Trowbridge,
24 State street, New York.
F. B. Wheeler & Co.,
24 Stone street, New York.
R. W. Forbes & Son,
14 S. William street, New York.

There are also in this city a number of resident buyers representing Australian houses and also branches of Australian houses. Among them are McLean Bros. & Rigg, 52 New street, New York, a large Hardware and Machinery firm having warehouses at Melbourne, Sydney and Adelaide, and who have had a branch office here for a number of years for the purchase and shipping of their goods. This house shipped the present year, we are advised, one line of Agricultural Implements to the value of over $135,000. S. Hoffnung & Co., Sydney, represented here by V. Basanta, 17 Whitehall street, New York, also do an extensive business; and also H. S. Chipman, Sydney, represented by W. A. Chipman, 17 Whitehall street, New York. R. H. Dana, & Co., 25 Beaver street, New York, make a specialty of representing American manufacturers in the Australian market and of bringing manufacturers into direct communication with importers in the colonies, and have a branch house at Sydney. They are also giving attention to commission business.

There is practically no difference in the treatment of foreign from domestic orders, with the exception of the goods being more stoutly boxed for ocean shipment and very closely packed. As the ocean freight is based on outside measurement, it is therefore essential that goods should be packed as closely as possible.

No additional trouble attaches to the manufacturer by reason of the goods being destined for a foreign port. They are simply consigned in the usual way to the purchaser at New York, who transfers them to the outgoing vessel and attends to the details of custom house requirements, &c. If the maker's terms are f.o.b. vessel (as it is desirable they should be), the consignee simply deducts the charge for cartage when remitting, also the freight, if the latter be not prepaid.

The present rates of freight to the principal ports average about 16¢ per cubic foot. This is higher than from English or Continental ports, attributable in a large degree to the paucity of goods that can be sent to this country from the Antipodes, thereby shutting off return cargoes.

Up to within the last few weeks sailing vessels have been exclusively employed in the carrying trade to Australia; but recently the first steamer was dispatched from this port direct, and another is just about to be laid on. It is probable that as the volume of our export trade increases frequent direct steamers will become an established fact, in conjunction with sailers in the intervals. The average trip of sailers is 90 days, while it is anticipated that steamers will accomplish the voyage in about half that time. Hitherto the only means of shipping goods wanted in a hurry were by the Australian mail steamers leaving San Francisco monthly, or by steamers via London. Both these routes, however, are very costly.

We give below a carefully compiled list of goods principally in the Hardware and related lines which are exported from this country to Australia. A careful study of it will be suggestive to manufacturers and will doubtless suggest to many the importance of cultivating their export business:

Goods Exported to Australia.

Anvils,
Asbestos Packing,
Augers,
Awls,
Axes,
Axles,
Axle Grease,
Bags,
Barb Wire,
Barrows,
Baskets, Wire,
Beaders,
Beaters, Egg,
Bells,
Bench Screws,
Bench Stops,
Belting,
Belt Hooks,
Bicycle and other Oilers,
Binders and Reapers,
Binding Twine,
Bird Cages,
Bits,
Blacking,
Blocks,
Blowers,
Boards, Wash,
Bolts,
Bolt Clippers,
Borers,
Bottle Stoppers,
Boxes, Miter,
Brass,
Brackets,

Broilers,
Brooms,
Brushes,
Bumpers,
Burners,
Butter Workers,
Bull Rings,
Bush Hooks,
Butts,
Cages, Bird,
Can Openers,
Cane Knives,
Canned Goods,
Cartridges,
Carriages, Children's and others,
Carriage Hardware,
Carriage Jacks,
Carriage Woodw'rk,
Carts, Road,
Castings, Malleable,
Casters,
Chairs,
Chalk Lines,
Checks, Door,
Chests, Tool,
Chimneys, Lamp,
Chisels,
Choppers, Meat,
Chucks,
Churns,
Cleats,
Clippers,
Clippers, Bolt,
Clocks,
Cloth, Wire,
Clothes Pins,
Coal Forks,
Coat and Hat Hooks,
Cocks,
Coffee Mills,
Collars, Dog,
Compound, Weld'g,
Cord, Picture,
Cord, Sash,
Corers and Parers,
Cork Pullers,
Cork Screws,
Corn Drills,
Corn Flour,
Corn Planters,
Corn Shellers,
Crops, Whip,
Cultivators,
Currycombs,
Cuspidors,
Cutters, Feed,
Cutters, Glass,
Cutters, Vegetable,
Daubers,
Desks,
Dies,
Diggers, Post Hole,
Dishes,
Draw Knives,
Drills,
Drills, Corn,
Drills, Grain,
Drilling Well Plant,
Drivers, Screw,
Dog Collars,
Door Checks,
Door Mats,
Dusters, Feather,
Edge Tools,
Egg Beaters,
Electric Supplies,
ElectroPlated Ware,
Emery Paper,
Emery Wheels,
Escutcheons,
Evaporators, Fruit,
Farm Tools,
Faucets,
Feather Dusters,
Feed Cutters,
Feed Mills,
Fiber Ware,
Files,
Filters,
Fittings, Carriage,
Flour, Corn,
Fluters,
Fly Traps,
Forges, Portable,
Forks, Coal,
Forks, Hay,
Forks, Manure,
Freezers, Ice Cream,
Fretwood,
Fretwood Machines,
Fruit Evaporators,
Fruit Jars,
Furniture,
Garters,
Gasoline,
Gates, Molasses,
Gauges,
Glass,
Glass Cutters,
Globes,
Glue,
Glue Pots,
Grain Drills,
Granite Ware,
Graters,
Grease, Axle,
Grinders,
Grinders, Knife,
Grindstones,
Hames,
Hammers,
Hammocks,
Handles, all kinds,
Hangers, Picture,
Harness,
Harrows,
Hatchets,
Hay Forks,
Hay Knives,
Heaters,
Hinges,
Hoes,
Hog Ringers,
Holders, Mop,
Holders, Scrub,
Hooks, Butt,
Hooks, Bush,
Hooks, Coat and Hat,
Hooks, Wall,
Hose,
Ice Cream Freezers,
Ink Pads,
Ink Stands,
Illuminators,
Indicators, Speed,
Irons, Sad,
Jacks, Carriage,
Jars, Fruit,
Kalsomine,
Kerosene,
Keys,
Knife Grinders,
Knives, Cane,
Knives, Draw,
Knives, Hay,
Knives, Mincing,
Ladders,
Lamps,
Lamp Chimneys,
Lamp Shades,
Lampware,
Lamp Wicks,
Lanterns,
Lard Oil,
Latches,
Lathes,
Lawn Mowers,
Lawn Sprinklers,
Lead Pencils,
Leather,
Lemon Squeezers,
Levels,
Lifts, Transom,
Lines, Chalk,
Locks,
Locks, Sash,
Lumber,
Lubricating Oils,
Machine Needles,
Machine Oilers,
Machines, Sewing,
Machines, Fretwood,
Machinery, Mining,
Machinery, Woodworking,
Machines, Washing,
Malleable Castings,
Mallets,
Mangles,
Manure Forks,
Mattocks,
Mashers, Potato,
Match Safes,
Mats, Door,
Mattresses,
Meat Choppers,
Meat Stuffers,
Mills, Coffee,
Mills, Feed,
Mills, Paint,
Mills, Wind,
Mincers,
Mincing Knives,
Mining Machinery,
Miter Boxes,
Molasses Gates,
Mop Holders,
Motors, Water,
Mouse Traps,
Mowers, Lawn,
Nails,
Nail Sets,
Needles, Machine,
Nuts,
Oak,
Oars,
Oil Stones,
Oil, Lard,
Oils, Lubricating,
Oils, Machine,
Oilers, Bicycle and other,
Packing,
Packing, Asbestos,
Pads, Ink,
Pails,
Paints,
Paint Mills,
Paper, Emery,
Paper, Sand,
Parers and Corers,
Pencils, Lead,
Picks,
Picture Cord,
Picture Hangers,
Pins, Clothes,
Pins, Rolling,
Pipe Tongs,
Pistols,
Planes,
Plows,
Plumbs,
Planters,
Planters, Corn,
Plaster,
Plates, Screw,
Polish,
Polish, Satin,
Pointers, Spoke,
Portable Forges,
Post Hole Diggers,
Potato Mashers,
Pots, Glue,
Presses, Vegetable,
Pruning Shears,
Pullers, Cork,
Pulleys,
Pumps,
Punches,
Racks, Tool,
Rakes,
Rasps,
Rat Traps,
Razors,
Razor Strops,
Reapers and Binders,
Reels,
Reflectors,
Refrigerators,
Rosin,
Rings, Bull,
Rings, Hog,
Rivets,
Rivet Sets,
Roasters,
Road Carts,
Rollers,
Rollers, Shade,
Rollers, Towel,
Rolling Pins,
Rules,
Sad Irons,
Safes, Match,
Sandpaper,
Sash Cord,
Sash Locks,
Sash Tools,
Satin Polish,
Saws,
Saw Sets,
Scales,
Scissors,
Scoops,
Scrapers,
Screws, Bench,
Screws, Cork,
Screw Drivers,
Screw Plates,
Scrub Holders,
Scythes,
Seats, Veneer,
Seed Sowers,
Sets, Rivet,
Sewing Machines,
Shades, Lamp,
Shade Rollers,
Shades, Umbrella Lamp,
Shaft Tips,
Shears,
Shears, Pruning,
Shellers, Corn,
Shipping Tags,
Shovels,
Shrinkers, Tire,
Sifters,
Skates,
Slates,
Sockets, Whip,
Spades,
Speed Indicators,
Spoke Pointers,
Spoke Trimmers,
Sporting Goods,
Springs,
Sprinklers, Lawn,
Squares,
Squeezers, Lemon,
Stands, Ink,
Staves,
Stencils,
Stops, Bench,
Stoppers, Bottle,
Store Trucks,
Stoves,
Stones, Grind,
Stones, Oil,
Strainers,
Strops, Razor,
Stuffers, Meat,
Syringes,
Tacks,
Tags, Shipping,
Taps,
Tills,
Tips, Shaft,
Tire Shrinkers,
Tire Wheels,
Thermometers,
Thrashers,
Tongs, Pipe,
Tool Chests,
Tools, Edge,
Tools, Farm,
Tool Racks,
Towel Rollers,
Transom Lifts,
Traps, Fly,
Traps, Mouse and Rat,
Trimmers, Spoke,
Trimmers, Wick,
Trucks, Store,
Turpentine,
Twine, Binder,
Umbrella Lamp Shades,
Urns,
Varnishes,
Vegetable Cutters,
Vegetable Presses,
Veneer Seats,
Vises,
Wall Hooks,
Ware, Electro Plate,
Ware, Fiber,
Ware, Granite,
Ware, Lamp,
Washboards,
Washing Machines,
Water Motors,
Wringing Machines,
Welding Compound,
Well Drilling Plant,
Wheels,
Wheels, Emery,
Wheels, Tin,
Whip Crops,
Whip Sockets,
Wick, Lamp,
Wick Trimmers,
Wind Mills,
Wire, Barb,
Wire Baskets,
Wire Cloth,
Wire Goods,
Woodwork, Carriage,
Woodworking Machinery,
Workers, Butter,
Wrenches,
Wringers.

Export Notes.

E. Bement & Sons, Lansing, Mich., have opened an office at 69 Beekman street, New York, to accommodate their increasing export trade, and will be prepared to show samples of the large line of Implements which they are making especially adapted to the foreign trade. They will also be in a position to show samples of a line of Stoves also of interest to export buyers. They will be represented by William C. Barker Company.

Joseph H. Seed, 21 and 23 Centre street, New York, is extending the sale abroad of his Reversible Self Cleansing Water Filters and other specialties manufactured by him. He has appointed John C. Plimpton & Co., American Hardware merchants, No. 65 Victoria street, Liverpool, sole agents for their sale in England and Continental Europe.

Shepard Hardware Company, Buffalo, N. Y., advise us that for the convenience of their foreign customers they have opened an office in New York for the transaction of their export business. It is located at 69 Beekman street, and is in charge of Wm. C. Barker Company.

Ausable Horse Nail Company, 4 Warren street, New York, are about sending a representative to Australia for the purpose of furthering the sale of their Horse Nails in that market. The company report such a large demand for their Nails both from foreign and domestic trade that they are making an important enlargement of their plant.

Mr. Hoffnung, of S. Hoffnung & Co., Sydney, New South Wales, is at present in this city looking after the interests of his house, who are known as among the most important buyers of Hardware in that market.

Australian Letter.

The following letter from Polhemus Lyon, special representative of American manufacturers in foreign markets, will be found of interest, treating as it does of the condition of trade in the colonies, and especially in New South Wales. Mr. Lyon, our readers will remember, is of the firm of Tower & Lyon, 95 Chambers street, New York, and is making an extended tour in the interest of the manufacturers whom he represents. He writes from Sydney, New South Wales:

To the Editor of The Iron Age: I think most of our people at home would be very much surprised to see the mammoth Hardware concerns in these colonies. At Brisbane there are three first-class wholesale Hardware houses, two of whom do a business of not less than $1,000,000 per annum, and here there are five wholesale Hardware houses which will rank in the amount of business they do with the leading concerns in our larger cities. One of these Hardware jobbers did a business the year past of $2,500,000, while in addition to these five there are four other Hardware

jobbers who carry liberal stocks and turn over a great many goods.

I had been led to believe that the trade here were chiefly general merchants, but these concerns referred to above carry nothing but Hardware, lamps and glassware, though there are several general merchants here who have Hardware departments equal to some of our jobbers' stocks at home. One firm of these general merchants have a building erected by themselves for their exclusive use 130 x 190 feet, and seven stories nigh, with outside warehouses for duplicate bulk stock. The general merchants carry everything but dry goods and groceries.

One would say that this colony in its chief city was overloaded with wholesale Hardware houses. Possibly this is not felt because incomes in New South Wales are proportionately larger than at home, and the wants of the people are so much greater. It is, of course, very gratifying to find such large lines of American Hardware on the shelves here, where we are in direct competition with all the rest of the world. If it were not that our mail goes so seldom (but once a month), and that it takes so long to get our freight here, we would do much better. There are no steam lines to Australia from our Atlantic seaboard owing to the inability to get freight back, and the sailing vessels which come are not first class in point of speed, so that they average over 100 days from port to port. I lost quite a liberal order for some lines simply and only because the goods could be supplied from England so much quicker. When we get our fortnightly mail service between San Francisco and here, of which now there is some prospect, matters will be very much helped, and though a Protectionist at home, I do not think I ever shall advocate protection on wool. We are certainly unable to raise the quality of wool which is obtained here, nor can they in any part of the world, so far as known, yield such a fleece. If we only would allow the Australian wool into our markets free of duty there would be plenty of business for direct steam lines and a very much increased purchase of our American products.

The Australians feel very kindly toward us. Several times has this remark been made to me: "We are where you were 100 years ago." The fact being that they are striving for federation, which will without doubt be accomplished, and the five colonies of Australia and New Zealand be united under one general government, somewhat after our American system. Then the more advanced hope that Australia will become independent of the home country. I should judge from all I hear this is a possibility of the future some distance removed. I find that they look to us for models to a great extent, and I am told by a leading judge here that the decisions of our United States Supreme Court are quoted as precedents very frequently and thought a great deal of. The Government here is a very paternal one, owning and operating the railways and even the tramways.

Henry George was here lately and found that the land system in force was much such as he had been advocating so strenuously with us, and that Australia was really practicing what he had been preaching. The New South Wales Government is only allowed to sell about 200,000 acres per annum. All the great sheep ranches, or "stations," as they are called here, are leasehold, generally at about 2d per annum, which, small as it is, amounts to quite an item when you learn that several of these stations comprise 200,000 to 225,000 acres—small principalities, as it were. But under the Homestead law a man can take up 320, and even 640 acres, paying 1s per acre per annum for 20 years, when he receives clear title for the property. This, however, is subject to certain conditions of improvements, such as fencing in and building a house, &c.

Without question New South Wales is the colony of all Australasia for the future, its resources in minerals, and possible farm lands when irrigation is introduced promising a rich future for the colony. This is the only colony which has no protective tariff, the others, more particularly Victoria, having prepared their tariff with a view to protection. Business in New South Wales has been very much distressed through the exceptional rainfall during the past year—considerably more than double any previous term within memory—but this tremendous soaking, though at present a burden, will result in great good to the grazing districts. The Government are just placing contracts involving large expenditure for public works, so that taking all these into consideration the trade are very hopeful of a prosperous term of years just dawning.

The Care of Price Lists.

BY SEMPER PARATUS.

(Concluded from page 509, September 25.)

CLASSIFICATION OF PRICE-LISTS

used in designating contents of drawers B. The large bound volumes of leading makers need no more classification than to put similar lines of goods together, for example: The Russell & Erwin Mfg. Company, Sargent & Co., Peck, Stow & Wilcox Co., &c.

For small lists and circulars we have adopted the following classification:

1. Files and Emery Wheels, Emery, Emery Paper, Grindstones.
2. Saws and Saw Tools.
3. Woodworkers' Tools.
4. Woodworkers' Machinery.
5. Drills for wood and iron, Reamers, Augers and Bits.
6. Drill Presses.
7. Punches, Hand and Power.
8. Small Machinists' Tools.
9. Machinists' Supplies.
10. Railroad and Contractors' Tools.
11. Vises.
12. Taps and Dies, Screwplates.
13. Blacksmiths' Tools, Stone Cutters' Tools.
14. Saddlers' Tools.
15. Lumbering Tools.
16. House Furnishing Tools and Machines.
17. Pipe Tools.
18. Lathes and Planers.
19. Lathe Tools.
20. Tinners' Tools.
21. Electric Supplies.
22. Cabinet Hardware.
23. Agricultural Tools.
24. Agricultural Machines.
25. Drawing Material and Tools.
26. Leather Belting and Supplies.
27. Foundry Supplies.
28. Paper.
29. Builders' Hardware (may subdivide in Locks, &c.)
30. Rope.
31. Iron and Steel, Malleable Iron Castings.
32. Chain, Wire and Rivets.
33. Cotters, Staples, Tacks.
34. Nails, Screws and Bolts.
35. Paints.
36. Brushes.
37. Twines.
38. Metals and Tin Plate.
39. Tinners' Trimmings.
40. Woodenware.
41. Handles.
42. Wheelbarrows.
43. Wagon Woodwork.
44. Pumps.
45. Horse Clothing, &c.
46. Barn Supplies.
47. Scales and Trucks.
48. Sporting Goods.
49. Fishing Tackle.
50. Wire Work.
51. Lanterns.
52. Glass, Common.
53. Plate and Fancy Glass.
54. Vases and Statuary.
55. Rubber Goods and Hose.
56. Stoves.
57. Furnaces.
58. Stove Furniture and Iron Hollowware.
59. House Furnishing Goods.
60. Cutlery and Scissors.
61. Novelties and Razor Strops.
62. Tinware.
63. House Furnishing Goods.
64. Packing.
65. Lubricants.
66. Factory Supplies.
67. Fittings.
68. Iron and Brass Steamwork.
69. Brass Waterwork.
70. Engine Trimmings.
71. Engineers' Supplies.
72. Steam Gauges and Indicators.
73. Plumbers' Specialties.
74. Plumbers' Marble and Slatework.
75. Pulleys and Shafting.
76. Pipe, Wrought Iron, Lead, &c.

This system is recommended, as it requires but a short time to put it in execution. Get your case made according to your wants. There are some items in the above list which you do not handle. Cut them out, and change classifications according to your wants. Supposing you have condensed it and find you want 54 drawers, you will want six tiers of drawers. Leave the hight unchanged; it is just right. Order the case, allowing at least one tier extra—you may want to add to the number. The extra drawers will come in handy for other purposes, as letter heads, bill heads, electrotypes, &c. Then sort out your circular matter and catalogues—make the proper labels, number them and place them in their proper spaces. You are ready to do business. A customer inquires for a Buckeye Cultivator. Your drawer marked "Agricultural Machines" will help you find it in a moment, and you can make the sale. You have the discount noted in the circular and everything works smoothly. You can make an index to the drawers, noting what you have in each drawer. I do not think it is practical, unless in large houses, where there is a large clerical staff who can attend to these details.

But you find circulars which contain, besides agricultural implements, some other interesting and salable lines—say agricultural machinery. Well, I would advise folding such circular into the most important line and putting a card into the other drawer, mentioning maker's name and article and number of drawer in which his complete list may be found.

You cannot fail to find what you want in the shortest time without index; but if you want the index you can have it. Such index would have to be in the form of a book alphabetically arranged—not by maker's name, but by articles to be looked for, with enough space left after each article to catalogue the probable number of makers of this article. Such a list, of course, would be a handy reference book for everybody, and it is advisable to get it up and keep it up for every dealer. It is a desirable list for every buyer, and if not necessary for the file case of price-lists it is useful in many other instances. But even this index we should advise you to get up by classified lines, rather than single articles, as it would be too large a volume if prepared in the latter way.

A schedule of an index as intended, showing the idea we mean to convey, was given in our last issue.

Herman Funke.

We have already referred to the death of Herman Funke, senior member of the firm of Hermann Boker & Co., 101 Duane street, New York, which took place on September 15. A portrait of Mr. Funke is herewith presented, and his long and prominent connection with the Hardware trade will lend an especial interest to the following sketch of his life :

Mr. Funke was born in Crefeld, Germany, April 27, 1825, and was accordingly at the time of his death in the sixty-sixth year of his age. He received his education in his native place, where he remained until 1842 when he departed for the United States, arriving in this country on October 5. Mr. Funke obtained employment with his uncle, Hermann Boker, who was then doing business in John street, but subsequently removed to 50 Cliff street, where Mr. Funke and H. A. Schleicher became partners in the business on January 1, 1851, the firm name becoming Hermann Boker & Co. In 1863 Mr. Boker and Mr. Schleicher severed their connection with the firm and Mr. Funke became senior partner in the house, a position he continued to occupy until his death. In 1867 F. A. Boker, son of Hermann Boker, the founder of the house, was admitted as a partner, and he is now the senior member of the concern. In 1871 the firm commenced the erection of the large building 101 and 103 Duane street, running to 10 and 12 Thomas street, which they took possession of in the following year and have since occupied.

HERMAN FUNKE.

Mr. Funke was thus for over 40 years prominently identified with the Hardware business and with the growth of the firm of which he was the head, from its early days to its present position as one of the largest and best known Hardware establishments in the country. To this growth Mr. Funke contributed not a little, by his marked ability, wisdom and exceptionally good judgment in business affairs. The high esteem in which he was held by the trade is illustrated in the resolutions passed at a meeting of the Hardware Board of Trade of this city, which are being handsomely engrossed for presentation to his family. Mr. Funke was for years a director of the St. Nicholas Bank and was one of the founders of the Germania and German-American Insurance Companies and a director in them at the time of his death. He was president of the Poppenhusen Institute and also of the College Point Savings Bank. His residence for the past 30 years was in College Point. He leaves a wife, six married daughters and two unmarried sons.

Simpson, Hall, Miller & Co., Wallingford, Conn., announce that owing to the increasing demand for the Wm. Rogers' (Wallingford, Conn.) Spoons, Forks, Knives, &c., and for the convenience of the New England trade, they have appointed the Dunne Cutlery Company, 102 Milk street, Boston, as their selling agents, who will carry a full line of these wares.

Price-Lists, Circulars, &c.

W. J. Clark & Co., Salem, Ohio, issue a circular relating to the Victor Pinch Bar or Car Mover which they are offering to the trade. The circular illustrates and describes the appliance, as well as giving numerous testimonials from parties who have used it.

Geo. K. Oyler, St. Louis, Mo., has issued an 1890-91 catalogue, No. 104, styled "Everything on Wheels." Illustrations are given of Carts, Buggies, Phaetons, Road Wagons, Surreys, Track Wagons, Spring wagons, Delivery Wagons, and Mountain Wagons. These are in a large variety of styles, with prices ranging according to finish, &c. An additonal catalogue is sent illustrating Sorgo and Ribbon Sugar Cane Mills for steam, water and animal power; also Cook's Evaporators, Furnaces, Furnace Irons, &c. A large line of Plow Colters are shown as manufactured by him. These catalogues are each very complete in the respective lines and will doubtless be appreciated by the trade.

Hibbard, Spencer, Bartlett & Co., Chicago, Ill., issue an illustrated catalogue of Fall and Winter Goods, under date of September, 1890. These consist of Axes, Saws, Hand Sleighs, Skates, Weather Strips, Meat Cutters, Tea or Coffee Urns, Hollow Ware, Clocks, Carvers Silver Plated Knives, Forks and Spoons, Guns, Lamps, Glassware, &c. This catalogue will be found desirable for present use and to preserve for future reference.

The Harrington & Richardson Arms Company, Worcester, Mass., are sending to the trade a large illustrated sheet, showing their entire line of Revolvers manufactured by them. This includes H. & R. Improved Automatic Double Action; Premier Automatic Double Action; Vest Pocket Self Cocker; H. & R. Ejecting Double Action, Young America; Young America Double Action; Young America Safety Hammer; Safety Hammer Double Action and the American Double Action Revolvers. These arms are manufactured in various sizes and calibers.

The Lawrence Curry Comb Company, 204–210 East Forty-third street, New York, issue an 1890 supplement to their 1889 catalogue, in which they state that they have made the following changes: On all Combs of the Perfect and Elevated Back lines they now put fancy handles, and the Steel Solid Back line they have improved with heavy shanks and fancy handles. They also direct attention to the Combs shown in the supplement. On a separate card is shown their Check Rein Guard which they are introducing, the object of which is to keep the check rein from working off the bolt hook.

Murphy & Co., Newark, N. J., with offices at New York, Cleveland and St. Louis, send us a budget of printed matter, relating to the large line of Varnishes manufactured by them. Among others of their publications deserving of particular attention is a book of over 50 pages, printed in ye ancient style, under the title of "Delights of Coaching," by an Old Whip. This gives a history of the coach from the time it first came into use for carrying mail and passengers to the present time, when to excel with the ribbons is the ambition of the noblest and the richest. The five etchings contained in the book are by Stephen James Ferris, the cover and initial letters were designed by Francis Lathrop expressly for this book. Three pages at the end are devoted to advertising matter.

The Simmons Hardware Company, St. Louis, Mo., issue a 90-page catalogue for 1890–91 devoted to Rochester Lamps, Lanterns, Lamp Fixtures, &c. These Lamps are illustrated in great variety, showing Hanging, Piano or Extension, Banquet, Parlor, Bracket, Night Lamps, Chandeliers, &c. A line of Lamp Shades for Library Lamps are shown, also Umbrella Lamp Shades. This catalogue will be of interest to the Hardware trade, as Lamps are becoming prominent articles in Hardware stocks.

We would direct the attention of the trade to the advertisement of "A. M. B." among the special notices on page 66, who desires a position as traveler or correspondent. This gentleman has been connected with the general Hardware business for nearly 18 years as buyer, correspondent and salesman, and has excellent references, and is, we are advised, competent to fill a responsible position.

The Holdfast Ties.

The Tie Company, Sidney, N. Y., manufacturers of the Holdfast Ties, as illustrated herewith, have sent us samples of nine different sizes and styles of these ties.

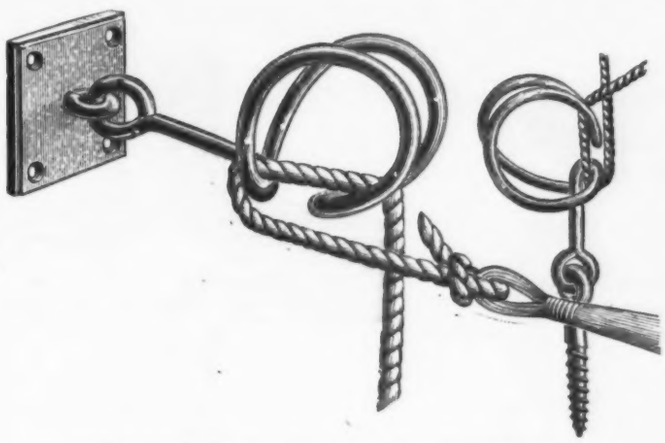


Fig. 1.—Holdfast Hammock and Clothes Line Tie.

They are made of wire bent to the required shape, and furnished with strings fastened to the wire. They are referred to as secure, quick, durable and cheap. The string is first drawn tightly around

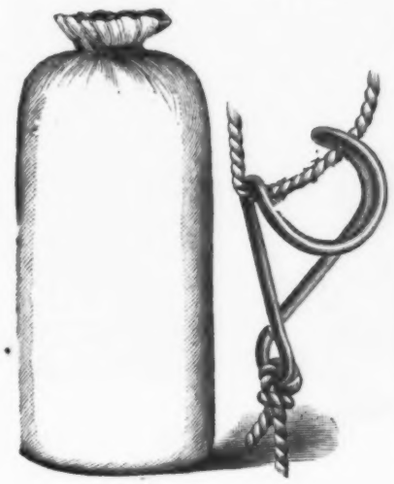


Fig. 2.—Holdfast Bag or Grain Binding Tie.

the article and then pulled into the close bend; this completes the operation with one motion and holds securely. Fig. 1 illustrates the hammock and clothes lines ties. It is claimed that a ⅜ sisal rope

Fig. 3.—Holdfast Book or Shawl Strap Tie.

will last as a hammock rope for several seasons; also that there will be no necessity for calling on the man of the house to put up the clothes line or hammock, as a child can operate the tie. Fig. 2 shows the bag or grain binding tie, referred to as being applied or released with one easy motion, and the most secure fastening yet made for the purpose. The book or shawl strap tie, Fig. 3, is alluded to as an article that will commend itself to the public, being neat, durable and cheap. The company are also making ties for shoe and glove laces, bill filing, mailing, advertising novelties, &c. The ease with which they can be tied or untied makes them convenient where knots have to be frequently tied. The manufacturers claim that they never cut or wear the rope or string.

The Perfection Sash Balance.

The Perfection Sash Balance Company, Rochester, N. Y., are introducing the sash balance shown in the illustration. The balance consists of a drum containing a flat coiled spring, running on a fixed arbor, which is supported in checks projecting back from the face plate. To the rim of this drum is fastened, by a simple hook attachment of tinned sheet steel, a braided cotton cord, or, for heavy sash or sash having long runs, a wire cable This cord or cable is coiled around the drum, which has a smooth surface, and leads thence over a guide pulley, and attached to the sash by an ordinary sash cord iron. The guide pulley runs in a frame which has pins at both ends, on which it swings. These pins are in holes provided on the back of the face plate, the upper hole being oblong, to permit the frame a certain amount of lateral motion. Near the lower end of the swinging frame hangs the brake, having its shorter end resting on the top of a corrugated cam, whose stem is slotted, and projects through the swinging frame, being shown through the circular opening in the face plate. Fastened in the groove of the longer end of this brake is an oil-soaked piece of leather, which rests loosely in the groove of the pulley. The swinging frame which carries the pulley forms an angle with the side of the drum in such a manner that the cord leads on to the drum at an angle with its direction of winding. This is intended to keep the unwound cord always crowded up against the cord already on the drum, and coil the cord without undue friction, owing to the ability of the frame to move. These features permit the use of a perfectly smooth drum, which is referred to as avoiding roughness and irregularity in the working of the cord. The brake is applied to the pulley by revolving the corrugated cam, from the face of the plate, with a screwdriver in the slotted stem. When the weight of the sash exceeds or does not equal the exact weight for which the balance is designed, a very slight turning of the corrugated cam throws the brake forward on the pulley, creating a resistance. This cam rests on a coiled wire spring, allowing a pressure

The Perfection Sash Balance.

being exerted on the brake sufficient to produce a resistance on the guide pulley equivalent to the adjustment desired when adjusted to the highest point of the cam; while any attempt to adjust beyond this, and thus to positively set or hold the guide pulley stationary, is prevented by the cam revolving to its original position, thus relieving the pressure of the brake until the cam is again revolved. By placing the brake on the guide pulley, instead of on the drum, as applied on some balances, the point is made that the cause of considerable trouble is removed. The placing of the brake on the guide pulley produces an extra drag on the suspension cord, but does not affect the spring, which always retains its original activity. When the sash is raised rapidly the effect is simply to decrease the grip of the cord on the guide pulley, the spring immediately taking up the slack in the cord, preventing the sash from advancing before the cord, avoiding the doubling up of the cord. Attention is directed to the importance of this arrangement. The braided cotton cord, or wire cable, is alluded to as having better wearing or lasting qualities than flat metallic tape. Below the drum on

the inner side of the face plate is a weighted lever hung loosely on a pin, having its disengaged end bearing lightly against the coiled cord or cable on the drum. As the cord unwinds the lever follows it up until the cord is almost off the drum, when this lever drops over, when a tooth cast on the drum comes round and strikes the lever, thus preventing further revolution. The tooth is so placed as to leave at least 3 inches of cord on the drum, thus preventing the cord from being torn from the balance. On its return the cord pushes the lever back, leaving the drum free to revolve. The balance is described as being as easy to apply as an ordinary sash pulley. The following points of excellence are pointed out by the manufacturers: 1. An even balance without any tendency of rising or falling in any possible position. 2. Means for adjusting the balance for slight variations in weight of sash. 3. Security against disarrangement by ordinary accident or ignorant handling. 4. Quietness of operation. 5. Durability. 6. Completeness. 7. Ease of application. The balances are made for sashes from 5 to 7 pounds to 36 to 40 pounds, and for runs from 35 to 66 inches. They are furnished in Berlin bronze, nickel, brass or bronze finishes.

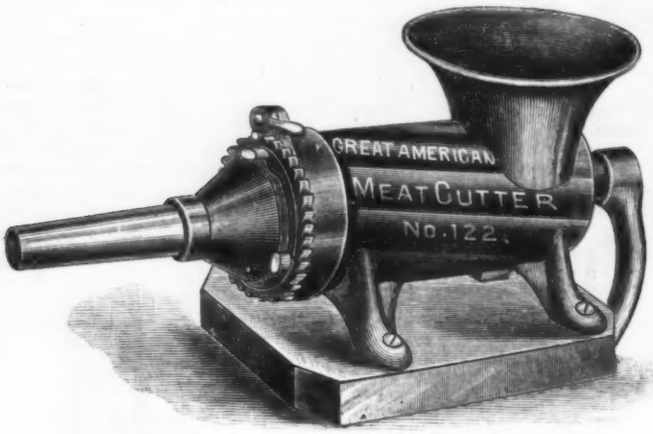


Fig. 1.—Great American Meat Cutter, with Stuffing Attachment.

Atkins' Perfect Saw Rounder.

E. C. Atkins & Co., Indianapolis, Ind., are introducing their Perfect Saw Rounder, as illustrated in Fig. 1 This is furnished with bed plate for post, Fig. 2, or with bed plate for bench, Fig. 3. It can be used with Atkins' saw guide, or by attachment to saw frame. It is intended to use a 10-inch mill bastard file. The following claims are made by the manufacturers for the rounder: That a saw can be rounded while on filing post or mandrel and every tooth be made the exact length; that the saw can be rounded after swaging; that it points the teeth perfectly square, leaving the filer a square point to file to; that the rounder will increase the cut of any mill, both in quantity and quality, and that it will save trouble with saws and loss by making poor lumber. The practical value of the rounder is spoken of by the manufacturers in the most confident terms.

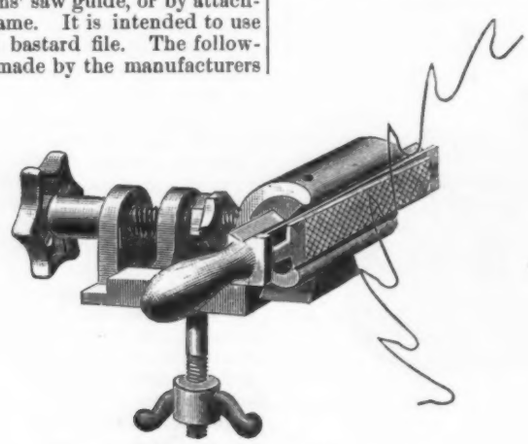


Fig. 1.—Atkins' Perfect Saw Rounder.

The cry in all directions is for more rolling stock. The New York and New Haven and Hartford Company have under contract 30 tug boats, ten standard locomotives and four car floats. Nearly all the trunk lines are enlarging their equipment. At Pittsburgh, owing to the shortage of cars, the furnacemen are unable to obtain proper supplies of coke, and in some cases banking up may be the costly result.

The Great American Meat Cutter.

The W. J. Lloyd Mfg. Company, Philadelphia, Pa., are putting their Great American Meat Cutter upon the market in an improved form, as illustrated herewith.

Fig. 2.—Reversible, Revolving Knife.

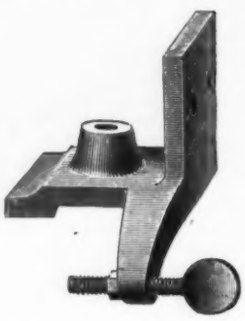


Fig. 2.—Bed Plate for Post.

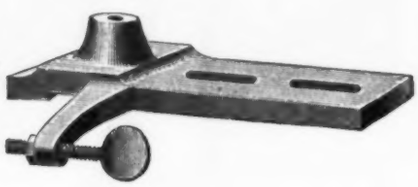


Fig. 3.—Bed Plate for Bench.

It is alluded to as doing the most of the work before the substance reaches the plate, and only finishes it at this point. The operation of cutting is described as follows: When the meat enters the machine it is pressed against a circular ridge inside the case by the archimedean screw; it is then carried forward and recut by the revolving and stationary knives. The revolving knife, Fig. 2, is referred to as having the advantage of being reversible—practically two knives in one—and the point is made that while one side is cutting the other side is lapping, and the knife always remains sharp. The meat is cut by this knife and perforated plate when the stuffer attachment is used. The meat is prepared in pieces about 2 inches square, seasoned and spiced, then passed through the machine with the attachment in position. It is stated that the triple cutting assures thorough mixing, while the chopping and stuffing is done in one operation. The stuffer attachment fastens to the outside of the plate, and after the meat goes through the machine it passes into the casing fast enough, it is claimed, to prevent air bubbles. The manufacturers call attention to the fly wheel machine as entirely new.

An appeal for the relief of Ireland from the potato famine is about to be made in America. The almost periodic visitation of this calamity will suggest the inquiry, Why this dependence on a single crop, and why not widen the range of culture? Michael Davitt says there is an abundance of land near the affected districts on which graizers are making fortunes. Primitive modes of agriculture, neglect of the fisheries, and, more than all, dependence on the Government, are probably accountable for much of the trouble.

Knives and Forks in Boxes.

The American Cutlery Company, 173-191 Mather street, Chicago, Ill., are putting up their plated knives and forks in boxes for the convenience of the trade, as illustrated in Figs. 1 and 2. These boxes are of hard wood, fancy carved, and no extra charge is made for them. The knives are referred to as being made in one piece from finest crucible steel, well forged and evenly tempered by the latest improved process, and specially ground and polished for silver plating. The manufacturers state that 12 dwt. of pure silver is used in plating each dozen, and every part of each knife is hand-burnished by experienced workmen, rendering plating hard and durable.

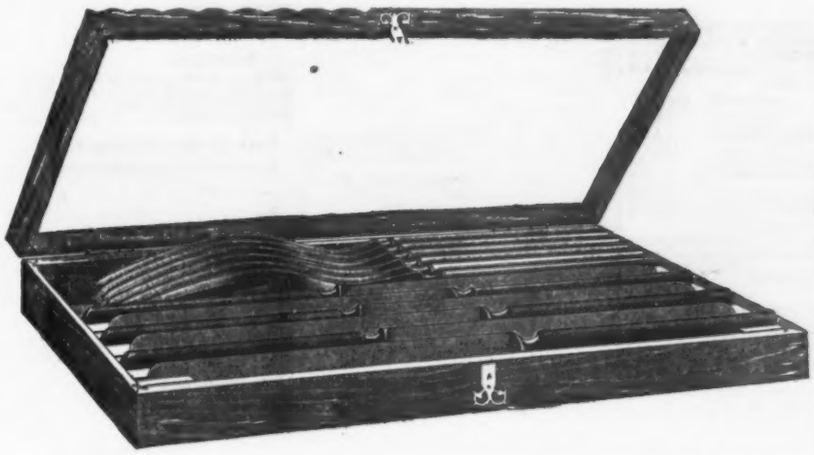
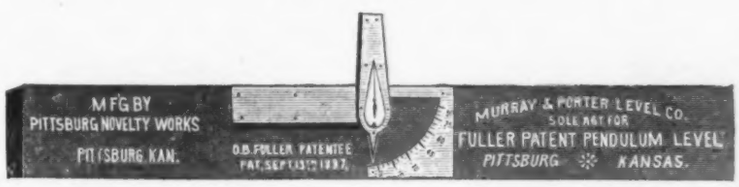


Fig. 1.—The American Cutlery Co.'s Arrangement of Plated Knives and Forks.

Fig. 2.—Showing Exterior Appearance of the American Cutlery Co.'s Boxes.

Fullers' Patent Pendulum Level.

The Murray & Porter Level Company, Pittsburgh, Kan., are introducing a plumb and level, as illustrated herewith, which is referred to as offering numerous advantages, being a combination of a level with the old fashioned plumb bob. The edge of the level is slotted on one side to allow a brass case containing a plumb bob to lay flat when not in use. The brass case is attached to the level in the slot by an adjustable screw so it may be raised to any angle parallel to the plane of the level. In the case is a plumb bob of steel hung on two case-hardened screws and suspended by a steel wire. The screws are adjustable, allowing the bob to move freely or stiffly, as may be desired. The case contains two rubber bumpers to receive the blows of the plumb-bob as it swings. The front of the case is covered by a heavy piece of plate glass, intended to keep the parts from injury. At the bottom of the case is a finger which runs over a quarter-circle marked in degrees and attached to the level. To ascertain the angle of any surface place the level on it and adjust the case until the plumb-bob hangs free, when the index finger will designate the proper degree on the dial below. Any angle in a right angle triangle or anything up to 90° may be had in this manner.



Fuller's Patent Pendulum Level.

The largest bell ever cast in the West has just been completed by G. Campbell & Sons, of the Centennial Bell Foundry, Milwaukee, for the new Wisconsin Central Depot in Chicago. The bell is 61 inches high, with a diameter of 80 inches, and weighs 10,500 pounds. Its surface is unpainted, and of a brilliant polish, and it bears the inscription, "I Ring For All." It will be suspended in the depot tower at an elevation of 200 feet.

We call attention to the advertisement of Chess, Cook & Co., of Pittsburgh, producers of steel plate, on page 67, which sets forth their special ability and range in this direction. It also details their ability to provide improved (clean) surfaces to blank from, thus saving costly dies and yielding cleaner product. This will be of interest especially to those who by limited use of Blanking steel cannot afford to carry on the troublesome and generally unsatisfactory operation of pickling for themselves in a small way. Their furnishing of the material and size within stated range in small as well as in large quantities will doubtless be appreciated by the consumer.

The iron steamer Olivette, of the Plant Line, cut off the stern of a Maine schooner, which was sailing without lights, as neatly as if she had been a water melon, with no other damage to herself than an indentation of the plates.

The Grottoes Company, Shendun, Va., whose capital stock is placed at $3,000,000, are grading streets, laying down street railways, erecting bridges and otherwise improving their property.

CONTENTS.

CURRENT HARDWARE PRICES.

OCTOBER 1, 1890.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers at the figures named.

Adjusters, Blind.

Domestic.....₩ doz $3.00, 33⅓%
Excelsior.....₩ doz $10.00....50&10&2%
Washburn's Self-Locking.....20&20&10%

Ammunition.—

Caps, Percussion, ₩ 1000—
Hicks & Goldmark's and Union Metallic Cartridge Co.
F. L. Waterproof, 1-10's.....34@35¢
E. B. Trimmed Edge, 1-10's.....46@48¢
E. B. Grnd. Edge, Cent. Fire, 1-10's.....46@47¢
Musket Waterproof, 1-10's.....50¢
G. D.....28¢
S. B. Genuine Imported.....45¢
Eley's E. B.....54¢ @ 55¢
Eley's D Waterproof, Central Fire...$1.60

Cartridges—
Rim Fire Cartridges.....50&5&2%
Rim Fire Military.....15&2%
Cent. Fire, Pistol and Rifle.....25&5&2%
Cent. Fire, Military and Sporting 15&5&2%
Blank Cartridges, except 22 and 32 cal., additional 10% on above discounts.
Blank Cartridges, 22 cal., $1.75.....2%
Blank Cartridges, 32 cal., $3.50.....2%
Primed Shells and Bullets.....15&5&2%
B. B. Caps, Round Ball, $1.75.....2%
B. B. Caps, Con. Ball, Swgd., $2.00.....2%

Primers—
erdan Primers, $1.00.....2%
B. L. Caps (for Sturtevant Shells) $1.00, 2%
All other Primers, $1.20.....2%

Shells—
First quality 4, 8, 10 and 12 gauge 25&10&2%
First quality, 14, 16 and 20 gauge ($10 list).....30&10&2%
Prize.....40&2%
Star, Club, Rival and Climax brands, 33⅓&10&2%
Selbold's Comb. Shot Shells.....15&2%
Brass Shot Sheils, 1st quality.....60&2%
Brass Shot Shells, Club, Rival, Climax.. 65&2%

Shells Loaded—
Standard List, July 19, 1890..40&10&5%

Wads—Price per M.
U.M.C.&W. R. A.—B. E., 11 up.. 68¢
U.M.C.&W. R. A.—B. E., 9&10... 82¢
U.M.C.&W. R. A.—B. E., 8..... 96¢
U.M.C.&W.R. A.—B. E., 7.....$1.10
U.M.C.&W. R. A.—P. E., 11 up.. 1.15
U.M.C.&W. R. A.—P. E., 9&10.. 1.50
U.M.C.&W. R. A.—P. E., 8..... 1.70
U.M.C.&W.R. A.—P. E., 7..... 1.80
Eley's B. E., 11 up.....$1.75
Eley's P. E., 11@20..... 2.80

Dis.20&2

Anvils.—

Eagle Anvils, ₩ ℔ 10¢.....15@15&5%
Peter Wright's.....10¼¢
Armitage's Mouse Hole.....9¼¢
Armitage's Mouse Hole, Extra.11½@11¾¢
Trenton.....9½@10¢
Wilkinson's.....9¾@10¢
J. & Riley Carr, Pat. Solid.....11@11½¢
Moore & Barnes Mfg. Co.....33⅓%

Anvil Vise and Drill—
Millers Falls Co., $18.00.....20%
Cheney Anvil and Vise.....25%
Allen Anvil and Vise, $3.00.....40&10%
Star.....45&5%

Apple Parers—See Parers, Apple, &c.

Augers and Bits—

Douglass Mfg. Co.
Wm. A. Ives & Co.
Humphreysville Mfg. Co.
French, Swift & Co. (F. H. Beecher,..
P. S. & W. Co.
Rockford Bit Company.
Cook's, Douglass Mfg. Co.
Cook's, N. H. Copper Co. 70&10%
Ives' Circular Lip.....60%
Patent Solid Head.....30%
C. E. Jenning & Co., No. 10, extension lip.....40%
C. E. Jennings & Co., No. 30.....60%
C. E. Jennings & Co., Auger Bits, ₩ set, 32½ quarters, No. 5, $5; No. 30, $3.50.20%
Lewis' Patent Single Twist.....45%
Russell Jennings' Augers and Bits.25&10%
Imitation Jennings' Bits.....60@60&5%
Snell's Jennings Pattern.....60%
Pugh's Black.....20%
Rockford, Jenning's Pattern.....60%
Car Bits.....60@60&10%
Car Bits, P. S. & W. Co.....60&10%
Snell's Car Bits.....60%
L. Hommodieu Car Bits.....15&10%
Forstner Pat. Auger Bits.....10%
Cincinnati Bell-Hangers' Bits....30&10%

Bit Stock Drills—
Morse Twist Drills.....50&10&5%
Standard.....50&10&5%
Cleveland.....50&10&5%
Syracuse, for metal.....50&10%
Syracuse, for wood (wood list).30@30&5%
Williams' or Holt's, for metal.50&10&10%
Williams' or Holt's, for wood..40&10%
Cincinnati, for wood.....30&10%
Cincinnati, for metal.....45&10%

Expansive Bits—
Clarks' small, $18; large, $26 ₩ .35@35&5%
Ives' No. 4, ₩ doz $60.....40%
Swan's.....40%
Steer's, No. 1, $25; No. 2, $22.....35%
Stearns' No. 2, $48.....20%

Gimlet Bits—
Common.....₩ gross $2.75@$3.25
Diamond.....₩ doz $1.10.....25&10%
Bee.....25@25&5%
Double Cut, Shepardson's.....45@4[illegible]&10%
Double Cut, Ct. Valley Mfg. Co ...30&10%
Double Cut, Hartwell's, ₩ gro.....$5.25
Double Cut, Douglass'.....40&10%
Double Cut, Ives'.....60@60&10%

Hollow Augers—
Ives.....
French, Swift & Co.....
Douglass'..... 33⅓@33⅓&10%
Bonney's Adjustable, ₩ doz $48....40&10%
Stearns'.....20&10%
Ives' Expansive, each $4.50.....50&5%
Universal Expansive, each $4.50.....20%
Wood's.....25@25&10%
Cincinnati Adjustable.....25&10%
Cincinnati Standard.....25&10%

Ship Augers and Bits—
L'Hommedieu's.....15&10@15&10&5%
Watrous'.....15&10@15&10&10%
Snell's.....15&10@15&10&5%
Snell's Ship Auger Patt'n Car Bits, 15&10@15&10@5%

Awl Hafts—See Hafts, Awl.

Awls, Brad Sets, &c—

Awls, Sewing, Common ₩ gr $1.70, 35%
Awls, Should. Peg, ₩ gr $2.45, 40@40&10%
Awls, Pat. Peg...₩ gr 65¢.... 40@40&10%
Awls, Shouldered Brad...2.70 ₩ gr.....35%
Awls, Handled Brad...$7.50 ₩ gr.....45%
Awls, Handled Scratch ₩ gr, $7.50.35&10%
Awls, Socket Scratch, ₩ doz, $1.50.25@30%

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

	Plain.	Beveled.
First quality	$8.00	$8.50
Others.....	7.50	8.00

Axle Grease—See Grease, Axle.

Axles—

No. 1, 1¼ @65¢, No. 2 5½@6¼%
Nos. 7 to 14.....55&5%
Nos. 15 to 18.....47½% } 3% cash
Nos. 19 to 22 .....70%
Concord Axles, loose collar.....5¢@6¢
Concord Axles, solid collar.....6¢@7¢
National Tubular Self-Oiling..... 33⅓&33⅓&5%

Bag Holders.—See Holders, Bag.

Balances—

Spring Balances.....40%

	No. 2000	20	30
Chatillon, ₩ doz.....	$0.80	0.95	1.75 net

Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50&10%

Bars.

Crow—
Cast Steel.....₩ ℔ 4¼¢
Iron, Steel Points..... ₩ ℔ 3¾¢

Basins, Wash—

Standard Fiberware, No. 1, 10½-inch, $2; 12-inch, $2.25; 13½-inch, $2.75; 15-inch, $3.25.

Beams, Scale—

Scale Beams, List Jan. 12, '82...50&10@50&10&5%
Chatillon's No. 1.....40%
Chatillon's No. 2.....50%
Custer's.....33⅓%

Beaters, Egg, &c—

Keystone, P.D.&C., Each, No. 1, $1; No. 2, $2.....20%
Dover.....₩ doz $1.50
Duplex (Standard Co.).....₩ doz $1.25
Rival (Standard Co.).....₩ doz $1.00
Duplex Extra Heavy (Standard Co.)..... ₩ doz $3.50
Bryant's.....₩ gro $14.00
Double (H. & R. Mfg. Co.), ₩ gro. No. 0, $12.00; No. 1, $15.00; No. 2 .....$36.00
Easy (H. & R. Mfg. Co.).....₩ gro $12.00
Triple (H. & R. Mfg. Co.).....₩ gro $16.50
Spiral (H. & R. Mfg. Co.).....₩ gro $4.50
Improved Acme (H. & R. Mfg. Co.)..... ₩ gro $9.00
Paine, Diehl & Co.'s.....₩ gro $24.00

Bells—

Cow—
Common Wrought.....60&10%
Western.....20&10%
Western, Sargent's list.....70&10%
Kentucky, "Star".....20&10%
Kentucky, Sargent's list.....70&10%
Dodge, Genuine Kentucky.....70@70&10%
Texas Star.....50&10@50&10&5%
Call.....40@40&5%
Farm Bells.....₩ ℔ 3¢@3½¢
Steel Alloy Church and School Bells..40%

Door—
Gong, Abbe's.....33⅓&10%
Gong, Yankee.....45&10%
Gong, Barton's.....40&10@50%
Crank, Taylor's.....25&10%
Crank Brooks'.....50&10&2%
Crank Cone's.....10%
Crank, Connel's.....20&10%
Lever, Sargent's.....60&10%
Lever, Taylor's Bronzed or Plated....net
Lever, Taylor's Japanned.....25&10%
Lever, R. E. M. Co.'s.....50&10&2%
Pull, Brook's.....50&10&2%
Pull, Western.....25&10%

Electric.
Wollensak's.....20%
Bigelow & Dowse.....20%
Taylor's.....20%

Hand—
Light Brass.....65&10%
Extra Heavy.....65&10%
White Metal.....60&10&10%
Silver Chime.....33⅓&10%
Globe(Cone's Patent).....25&10&35%

Bellows—

Blacksmiths'.....60&5@65%
Molders'.....40@40&10%
Hand Bellows.....40&10@50%

Belting, Rubber—

Common Standard.....70@70&5%
Standard.....60&10&10@70%
Extra.....50&10@60%
N.Y.B.&P.Co., Carbon...50&5@50&10&5%
N.Y.B.&P.Co., Diamond....40&5@40&10%

Bench Stops—See Stops, Bench.

Benders, Upsetters, Tire.

Stoddard's Lightning Tire Upsetters..15%
Detroit Perfected Tire Bender.....15%

Bits—

Auger, Gimlet, Bit Stock, Drills, &c., see Augers and Bits.

Bit Holders—See Holders.

Blind Adjusters—See Adjusters, Blind.

Blind Fasteners—See Fasteners, Blind.

Blind Staples—See Staples, Blind.

Blocks—

Ordinary Tackle, list May 20, 1889... See Trade Report.
Cleveland Block Co., Mal. Iron.....50%
Moore's Novelty, Mal. Iron.....50%

Boards, Stove.

Wood Lined "Crystal".....50%
"Embossed".....50%
"Oxidized".....45%
Paper Lined Zinc.....55%
"Crystal".....55%
"Embossed".....55%
"Oxidized".....45%

Bolts—

Carriage, Machine, &c.—
Com. list June 10, '84.....70&10&5&2½%
Genuine Eagle, list Oct., '84...75&10@80%
Phila. pattern, list Oct. 7, '84..80@80&10%
R.B.&W., old list.....70%
Machine, list Jan. 1, 1890..... 75&10@75&10&5%
Bolt Ends, list Jan. 1, 1890..... 75&10@75&10&5%

Door and Shutter—
Cast Iron Barrel, Square, &c..70@70&10%
Cast Iron Shutter Bolts.....70@70&10%
Cast Iron Chain (Sargent's list)....65&10%
Ives' Patent Door Bolts.....60%
Wrought Barrel.....70@70&10%
Wrought Square.....70@70&10%
Wr't Shutter, all Iron, Stanley's..60&10%
Wr't Shutter, Brass Knob, " .....40&10%
Wr't Shutter, Sargent's list.....60&10%
Wr't Sunk Flush, Sargent's list...55&10%
Wr't Sunk Flush, Stanley's list...50&10%
Wr't B.K.Flush. Com'n " ...55&10%

Stove and Plow—
Stove.....60%
Plow.....60&5%
R. B. & W., Plow.....55%

Tire—
Common, list Feb. 28, '83 .....65%
Port Chester Bolt and Nut Company:
Empire, list Feb 28, '83.....65%
Keystone, Philadel., list Oct. '84....80%
Norway, Phila., list Oct. '84.....75%
American Screw Company:
Norway, Phil., list Oct. 16, '84.....75%
Eagle, Phil., list Oct. 16, '84.....80%
Philadel., list Oct. 16, '84.....80%
Bay State, list Feb. 28, '83.....65%
R.B.&W., Philadel., list Oct. 16, '84.....80%

Borers, Tap.

Common and Rind.....20&10%
Ive's Tap Borers.....33⅓&5%
Enterprise Mfg. Co.....20&10&30%
Clark's.....33⅓@35%

Borax.....₩ ℔ 9½@10½¢

Boring Machines—See Machines, Boring.

Bow Pins—See Pins, Bow.

Boxes, Wagon.

Per ℔.....2¾¢

Braces.—

American Bit Brace Co.:
Nos. 10, 12, 20.....60&10%
Nos. 11, 21, 24, 27.....70&10%
Nos. 22, 23, 25.....60&10&5%
Nos. 13, 26, 36, 37.....70&10&5%
Ball Braces, net .....$1.12 to $1.25¢
Amidon's
Barker's Imp'd Plain.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet.....75&10@80%
Eclipse Rachet.....60%
Globe Jawed.....40@40&10%
Corner Brace.....40@40&10%
Universal, 8 in., $2.10 ;10 in.....$2.25
Buffalo Ball.....$1.10@$1.15
Barber's,
Nos. 10 to 16..... 80%
Nos. 30 to 33..... 50%
Nos. 40 to 63..... 50&10%
Saxton's,
Barker's Imp. Polished.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet, Polished.....50&10@60%
Ratchet, Nickeled.....40&10@50%
Buffalo Ball.....net, $1.10@$1.15
Bartholomew's,
Nos. 25, 27 and 30.....50&10@60&5%
Nos. 117, 118, 119.....70@70&5%
Common Ball, American.....$1.00@$1.10
Fray's Genuine Spofford's..50&5@50&10%
Fray's No. 70 to 120, 81 to 123, 207 to 414 50&10%
Ives' New Haven Novelty.....70@70&5%
New Haven Ratchet.....60&5@60&10%
Barber Ratchet.....60&5@60&10%
Barbers.....60&5%
Spofford.....60&5@60&10%
Osgood's Ratchet.....40&10@50%
P. S. & W. Co., Peck's Patent.....60%

Brackets.—

Shelf plain, Sargent's list, 55&10@55&10&10%
Shelf, fancy, Sargent s list, 60&10@60&10&10%
Reading, plain.....50&10@60&10&5%
Reading, Rosette.....60&10@60&10&10%

Bright Wire Goods—See Wire.

Broilers—

	Inch.....	9	10	9x11
Henis' Self-Basting.	Per doz	$4.50	5.50	6.50
New Haven.....				50%

Buckets, Well.

Galvanized—
Hill's.....₩ doz, 12 qt, $4.25; 14 qt, $5.25
Iron Clad.....₩ doz. 14 qt, $4.25@$4.50
Helwig's Flat Iron Band....$4.25@4.50
Helwig's Wired Top....₩ doz $4.00@4.25

Bull Rings—See Rings, Bull.

Butcher's Cleavers—See Cleavers Butchers'.

Butts—

Brass—
Wrought Brass.....75&10@80%
Cast Brass, Tiebout's.....50%
Cast Brass, Corbin's, Fast.....33⅓&10%
Cast Brass, Loose Joint.....33⅓&10%

Cast Iron—
Fast Joint, Narrow.....50&10&5@60%
Fast Joint, Broad.....50&10@60%
Loose Joint.....
Loose Joint, Japanned.....
Loose Joint, Jap. with Acorns..
Parliament Butts..... 70&5@70&10%
Mayer's Hinges.....
Loose Pin, Acorns.....
Loose Pin, Acorns, Japanned...
Loose Pin, Acorns, Japanned, Plated Tips.....

Wrought Steel—
Fast Joint, Narrow.....
Fast Joint, Lt. Narrow.....
Fast Joint, Broad.....
Loose Joint, Broad..... 70&10%
Table Butts, Back Flaps, &c.....
Inside Blind, Regular.....
Inside Blind, Light.....
Loose Pin.....
Bronsed Wrought Butts..... 50

Calipers—See Compasses.

Calks, Toe—

Gautier.....₩ ℔ 5½@6¢
Dewicks (Burke).....₩ ℔ 5½@6¢

Can Openers—See Openers, Can.

Cards—

Horse & Curry.....10&10&10&10%
Cotton.....10&10&10%
Wool.....10&10&10%

Carpet Stretchers—See Stretchers Carpet.

Carpet Sweepers—See Sw Carpet.

Cartridges—See Ammunition.

Casters—

Bed..... Brass....55@55&10%
Plate..... Others...60@60&10%
Shallow Socket.....
Deep Socket.....40&10%
Yale Casters, list May, 1884...30&10@40%
Yale, Gem.....60@60&5%
Martin's Patent (Phœnix).....45&10@50%
Payson's Anti-friction.....60@60&10%
Giant Truck Casters.....30%
Stationary Truck Casters.....50&10%
Socket Truck Casters.....50%

Cattle Leaders—See Leaders, Cattle.

Chain—

Trace, Wagon and Fancy Chains, List revised April 21, 1890.....50&10@60%
American Coil, in cask lots,

3-16	¼	5-16	⅜	7-16	½	⅝	¾
$7.75	5.45	4.55	4.00	3.65	3.50	3.40	3.30

Less than cask lots, add ½¢@½¢ ₩ ℔.
German Coil, list of June 20, 1887 50&10&5@60%
German Halter Chain, list of June 20, 1887.....50&10&5@60%
Covert Halter.....60&2%
Covert Traces.....35@3%
Covert Heel Chain .....50&2%
Oneida Halter Chain.....60@60&2%
Galvanized Pump Chain.....₩ ℔ 5½@6¢
Jack Chain, Iron.....75&10@80%
Jack Chain, Brass.....75@75&10%

Chalk—

White.....₩ gr 50¢
Red.....₩ gr 70¢
Blue.....₩ gr 85¢
See also Crayons.

Chalk Lines—See Lines.

Chisels—

Socket Framing and Firmer.
P. S. & W.....
New Haven.....
Witherby..... ..75 @ 75&10
Mix.....
Ohio Tool Co.....
Douglass.....75@75&5%
Buck Bros.....80%
Merrill.....60&10@60&10&5%
L. & I. J. White..... .....30@30&5%

Tanged and Miscellaneous.
Tanged Firmers.....40&10@50%
Butchers'.....$4.75@$5.00
Spear & Jackson's.....$5 to @
Buck Bros.....80%
Cold Chisels, ₩ ℔ .....15@10%

Chucks—

Beach Pat.....each, $8.00.....20%
Morse's Adjustable,each, $7.00, 30@20&5%
Danbury.....each, $6.00, 30@30&5%
Syracuse, Reis Pat.....25%
Skinner's Patent Chucks.
Combination Lathe Chucks.....33⅓%
Universal Lathe Chucks.....40%
Independent Lathe Chucks.....40%
Drill Chucks.....15%
Union Mfg. Co.,
Victor.....$8.50, 25%
Combination.....40%
Universal.....40%
Independent.....40%

Churns.

Tiffin Union No. 1, 5 gallon...$3.25 each
Tiffin Union No. 2, 7 gallon...$3.75 each
Tiffin Union No. 3, 10 gallon...$4.25 each

Clamps—

B. I. Tool Co.'s Wrought Iron.....25%
Adjustable, Cincinnati.....15&10%
Adjustable, Hammers.....15%
Adjustable, Stearn's.....30@30&10%
Stearn's Adjustable Cabinet and Corner.....30@30&10%
Cabinet, Sargent's.....60%&10%
Carriage Makers', Sargent's.....70&10%
Carriage Makers', P., S. & W. Co..40&10%
Eberhard Mfg. Co.....40&5@40&10%
Warner's.....40&10@40&10&5%
Saw Clamps, see Vises. Saw Filers'.
Carpenters', Cincinnati.....25&10%

Cleavers.

Butchers'.
Bradley's.....25@30%
L. & I. J. White.....20&5%
Beatty's.....40@40&5%
New Haven Edge Tool Co.'s.....40%
P., S. & W.....33⅓&5@33⅓&10%
Foster Bros.....30%
Schulte, Lohoff & Co.....40@40&5%

Clips—

Norway, Axle, ¼ & 5-16.....55&5&5%
2nd grade Norway Axle, ¼ & 5-16. 65&5%
Superior Axle Clips.....60%&5@70%
Norway Spring Bar Clips, 5-16..60&5&5%
Wrought-Iron Felloe Clips.....₩ ℔, 5½¢
Steel Felloe Clips.....₩ ℔, 5¢
Baker Axle Clips.....25%

Cloth and Netting, Wire—See Wire, &c.

Cockeyes.....50%

Cocks, Brass.

Hardware list.....50&2%

Coffee Mills—See Mills, Coffee.

Collars, Dog, &c.

Medford Fancy Goods Co.....40&10%
Embossed, Gilt, Pope & Steven's list 30&10%
Leather, Pope & Steven's list.....40%
Brass, Pope & Steven's list.....40%
Chapman Mfg. Company.....50&10@60%

Combs, Curry.

Fitch's.....50&10@50&10&10%
Rubber, per doz $10.00.....30%
Perfect.....50%

Compasses, Dividers, &c.—

Compasses, Calipers, Dividers.70@70&10%
Bemis & Call Co.'s
Dividers.....60&5%
Compasses & Calipers.....50&5%
Wing and Inside or Outside.....50&5%
Double.....60%
(Call's Pat. Inside).....30%
Excelsior.....50%
J. Stevens & Co.'s.....25&10%
Starrett's
Spring Calipers and Dividers....25&10%
Lock Calipers and Dividers.....25%
Combination Dividers.....25%

Coopers' Tools—See Tools, Coopers'.

Cord, Sash—

Common.....₩ ℔ 10@11¢
Patent, good quality.....₩ ℔ 13@13½¢
White Cotton Braided, fair...₩ ℔ 28@29¢
Common Russia Sash.....₩ ℔ 13½¢
Patent " " .....₩ ℔ 15¢
Cable Laid Italian Sash.....₩ ℔ 22@23¢
Indian Cable Laid " .....₩ ℔ 13¢
Silver Lake—
A Quality, White, 50¢.....10&10&5%
A Quality, Drab, 55¢.....10&10&5%
B Quality, White, 50¢.....28@30%
B Quality, Drab, 55¢.....31@33%
C Quality, White (only).....26⅓@28¢
Sylvan Spring, Extra Braided,White, 34¢
Sylvan Spring, Extra Braided, Drab..32¢
Semper Idem, Braided, White.....30¢
Egyptian, India Hemp, Braided.....25¢
Samson—
Braided, White Cotton, 50¢...30@30&5%
Braided, Drab Cotton, 55¢....30@30&5%
Braided, Italian Hemp, 55¢...30@30&5%
Braided, Linen, 80¢.....30@30&5%

Corkscrews—See Screws, Cork.

Corn Knives and Cutters—See Knives, Corn.

Crackers, Nut—

Table (H. & B. Mfg. Co.).....40%
Blake's Pattern.....₩ doz $2.00, 10%
Turner & Seymour Mfg. Co.....50%

Cradles—

Grain.....50&5&2@50&10&2%

Crayons.

White Crayons, ₩ gr, 12¢@12½¢.....10%
D. M. Stewart Mfg. Co., Metal Workers, ₩ gr, $2.50.....25%
M. Stewart Mfg. Co., Rolling Mill, ₩ gr, $2.50.....25%
See also Chalk.

Crow Bars—See Bars, Crow.

Curry Combs—See Combs, Curry.

Curtain Pins—See Pins Curtain.

Cutters—

Meat.
Dixon's ₩ doz.....40&5%
Nos.... 1 2 3 4
$14.00 $17.00 $19.00 $20.00
Woodruff's ₩ doz.....40&5%
Nos.... 100 150
$15.00 $18.00
Hales Pattern ₩ doz.....70@70&5%
Nos.....11 12 13
$27.00 $33.00 $45.00
American.....30%
Nos..... 1 2 3 4 B 5
Each.....$5 $7 $10 $25 $50 $60
Enterprise.....30%
Nos.....10 12 22 39 42
Each.....$3 $2.50 $4 $6 $15
Great American Meat Cutter.....30%
Nos.... 112 116 118 120 122
Each....$2.00 $2.75 $3.00 $2.50 $4.00
Miles' Challenge ₩ doz.....45@45&10%
Nos..... 1 2 3
$22.00 $30.00 $40.00
Home No. 1.....₩ doz, $26.00, 55&10%
Draw Cut, each:
Nos..5 2 6 8
$50 $75 $80 $225.....20@25%
Great American.....30%
Beef Shavers (Enterprise).....20&10@30%
Little Giant.....50%
Chadborn's Smoked Beef Cutter, ₩ doz $66.00

Tobacco.
Champion.....20&10@30%
Wood Bottom.....₩ doz $5.00@$5.25
All Iron.....₩ doz $4.25
Nashua Lock Co.'s..₩ doz, $18.00 50@55%
Wilson's.....55%
Sargents's.....₩ doz, $24, 55&10%
Acme.....₩ doz $20.00, 40%
Washer.
Smith's Pat.....₩ doz $12.00, 20&10&10%
Johnson's.....₩ doz $11.00, 33⅓%
Penny's.₩doz Pol. $14; Jap'd, $16.00, 55%
Appleton's.....₩ doz $16.00, 60&10%
Bonney's.....30&10%
Cincinnati.....25&10%

Cutlery—

Beaver Falls & Booth's.....33⅓
Wostenholme.....$7.75 to 2

Dampers, &c—

Dampers, Buffalo.....40&10%
Buffalo Damper Clips.....40&10%
Crown Damper.....40%
Excelsior.....40&10%

Diggers, Post Hole, &c.—

Samson Post Hole Digger, ₩ doz $36.00, 25%
Fletcher Post Hole Augers, ₩ doz $36, 20%
Eureka Diggers.....₩ doz $16.00@17.00
Leed's.....₩ doz $8.00@9.00
Vaughan's Post Hole Auger, ₩ doz $13.00@14.00
Kohler's Little Giant.....₩ doz. $18.00
Kohler's Hercules.....₩ doz. 15.00
Kohler' New Champion.....₩ doz. $9.00
Schniedler.....₩ doz. $18.00
Ryan's Post Hole Diggers..₩ doz $24.00
Cronk's Post Bars, ₩ doz $60.00, 50&5@50&10%
Gibbs Post Hole Digger, ₩ doz $30.00, 50¢
Imperial, ₩ dos $15.....45%

Dividers—

See Compasses.

Dog Collars—See Collars, Dog, &c.

Door Springs—See Springs, Door.

Drawers.

Money, ₩ doz.....$18&$20

Drawing Knives—See Knives, Drawing.

Drills and Drill Stocks—

Blacksmiths'.....each $1.75
Blacksmiths' Self-Feeding, each $7.50,20%
Breast, P. S. & W.....40&10%
Breast, Wilson's.....30&5%
Breast, Milliers Falls.....each $3.00, 25%
Breast, Bartholomew's....each $2.50, 25&10&40%
Ratchet, Merrill's.....20@20&5%
Ratchet, Ingersoll's.....25%
Ratchet, Parker's.....20@20&5
Ratchet, Whitney's.....20&10%
Retchet, Weston's.....20@25%
Ratchet, Moore's Triple Action...25@30%
Ratchet, Curtis & Curtis.....30%
Whitney's Hand Drill, Plain, $11.00; Adjustable, $12.00.....20&10%
Wilson's Drill Stocks.....10%
Automatic Boring Tools.....$1.75@$1.85
Twist Drills—
Morse.....50&10&5%
Standard.....50&10&5%
Syracuse (Metal list).....50&10%
Cleveland.....50&10&5%
Williams.....50&10&10%
New Process.....50&10&5%

Drill Bits.—See Augers and Bits.

Drill Chucks.—See Chucks.

Dripping Pans-See Pans, Dripping.

Drivers, Screw.

Douglas Mfg. Co.....20@20&10%
Disston's.....50%
Buck Bros.....30%
Stanley R. & L. Co.'s
Varnished Handles.....65&10%
Black Handles.....60&10%
Sargent & Co.'s
No. 1 Forged Blade.....60&10&10%
Nos. 20, 30 and 60.....60%&10&10%
P. S. & W.....70%
Knapp & Cowles No.1.....60&10&70%
No. 1 Extra.....60@60&10
Nos. 00 & 4.....50&5@50&10&5%
Stearns'.....25&10&5%
Gay & Parsons.....35%
Champion.....25&10%
Clark's Pat.....30@33⅓%
Crawford's Adjustable.....30%
Ellrich's Socket and Ratchet..25@25&10%
Allard's Spiral, new list.....25%
Kolb's Common Sense ₩ doz $6.00,25&10%
Syracuse Screw-Driver Bits...30&30&5%
Screw-Driver Bits.....₩ doz. 50@75¢
Screw-Driver Bits, Parr's.....₩ gro $6.25
Fray's Hol. Hdle. Sets. No. 3. $12.00, 25@25&10%
P. D. & Co.'s all Steel.....50%
Cincinnati.....25&10%
Brace Screw Drivers.....25&10%
Buck Bros.' Screw-Driver Bits....5

Egg Beaters.—See Beaters, Egg.

Egg Poachers.—See Poachers, Egg.

Electric Bell Sets.—See Bells, Electric.

Emery.—No. 4 to No. 54 to Flour,CF

	46 gr.	150 gr.	F. FF.
Kegs, ₩ ℔	4½¢	5 ¢	2½¢
½ kegs, ₩ ℔	4¾¢	5½¢	2¾¢
¼ kegs, ₩ ℔	5 ¢	5¾¢	3 ¢
10-℔ cans, 10 in case	6 ¢	6½¢	5 ¢
10-℔ cans, less than 10	10 ¢	10 ¢	7½¢

Enameled and Tinned Ware—See Ware, Hollow.

Escutcheon Pins—See Pins, Escutcheon.

Escutcheons.

Door Lock....Same dis as Door Locks.
Brass Thread.....60@60&10%
Wood.....25%

Expanded Metal.
List No. 5.

Lathing.....10%
Fencing, Painted Sheets.....20%
Netting, Painted Sheets.....20%
Door Mats, Galvanized.....25%
Window Guards, Paneled.....15%
Tree Guards, Paneled.....15%

Fasteners, Blind—

Mackrell's, ₩ doz. $1.00.....20@20&10%
Van Sand's Screw Pat., $15 ₩ gr..60&10%
Van Sand's Old Pat., $15.00 ₩ gr..55&10%
Washburn's Old Pattern, ₩ gr.....$9.00
Merriman's.....new list
Austin & Eddy No. 2008 ₩ gr.....$9.00
Security Gravity, ₩ gr.....$9.00

Faucets.—

Fenn's.....40%
Bohren's Pat. Rubber Ball.....25%
Fenn's Cork Stops.....33⅓%
Star.....60%
Fray's Pat. Petroleum.....40&5&2%
B. & L. B. Co.
West's Lock, Open and Shut Key...50%
Star, Metal Plug, new list.....40%
Lockport, Metal Plug, reduced list..60%
Metallic Key, Leather Lined....60&10@60&10&10%
Cork Lined.....70&5@70&10%
Burnside's Red Cedar.....50%
Burnside's Red Cedar, bbl lots....50&10%
John Sommers'
Peerless Best Block Tin Key.....40%
IXL, 1st quality, Cork Lined.....50%
Diamond Lock.....40%
Perfection, Fla. Red Cedar.....50%
Goodenough Cedar.....50%
Boss Metallic Key.....50%
Reliable Cork Lined.....60%
Western Pattern Cork Lined.....50%
Self-Measuring
Enterprise, ₩ doz $50.00.....20&10%
Lane's, ₩ doz $36.00.....25&10%
Victor, ₩ doz $36.00.....25&10%

Felloe Plates—See Plates, Felloe.

Fifth Wheels.—

Derby and Cincinnati.....45&5%
Brewster.....50&5%

Files—

Domestic—
Nicholson Files, Rasps, &c.....60&10@60&10&5%
Nicholson (X. F.) Files.....25%
Nicholson's Royal Files (Seconds).....75% (extra prices on certain sizes)
Other makers,best brs.nds60&10@50&20%
Fair brands.....60&10&10@70&5%
Second quality.....70&10@75&10%
Nicholson's Horse Rasps....60&10@60& 10&5%
Heller's Horse Rasps.....50&7½@50&10%
McCaffrey's Horse Rasps.....50&10%
Chelsea Horse Rasps, Hand Cut...50&10%
Imported—
Moss & Gamble....List, April 1, 1883, 15%
Butcher.....Butcher's list, 20%
Stubs.....Stubs list, 25@30%
Turton's.....Turton's list, 20@25%
Greaves' Horse Rasps..American list, 60%

Fixtures.

Grindstone—
Sargent's Patent.....70&10%
Reading Hardware Co.....30&10%
P., S. & W. Co.....50&10%

Fluting Machines—See Machines, Fluting.

Fluting Scissors—See Scissors, Fluting.

Fodder Squeezers—See Squeezers, Fodder.

Forks—

Hay, Manure, &c., Asso List.....70%
Hay, Manure, &c., Phila. List. 60@60&5%
Plated, see Spoons.

Frames—

Saw—
White Vermont.....₩ gro $9.00@10.00
Red, Polished and Varnished.....₩ doz $1.50, 25%

Screen, Window and Door—
Porter's Pat. Window and Door Frame. 33⅓&10%
Warner's Screen Corner Irons..33⅓@ 33⅓&10%
Stearns' Frames and Corners..25@25&10%

Freezers, Ice Cream—

White Mountain.....60@60&5%
Granite State.....65@65&5%
Arctic.....70@70&5%
American.....60%
Buffalo Champion.....65@65&5%
Shepard's Lightning.....65@65&5%
Gem.....65%
Blizzard.....70%
Double Action Crown.....60%
Crown.....60%
Star.....%
Peerless and Giant.....60&10%
Zero and Pet.....65&10%
Boss.....65&10&10%
Keystone, P. D. & Co., each, $1.50....20%

Fruit and Jelly Presses—See Presses, Fruit and Jelly.

Fry Pans—See Pans, Fry.

Funnels.

Gersdorff's Perfection, Standard and Globe; *Tin*, 1 gro., 10 %; 2 to 5 gro., 20 %; 5 to 10 gro.....30 %
Copper, 1 to 6 doz., 15 %; 6 to 12 doz., 20 %; over 12 doz.....25 %

Fuse— ₩ 1000 ft

Common Hemp Fuse,for dry ground.$2.70
Common Cotton Fuse,for dry ground 2.85
Single Taped Fuse, for wet ground..
Double Taped Fuse, for very wet gr. 4.85
Triple Taped Fuse, for very wet gr.. 5.60
Small Gutta Percha Fuse, for water. 7.50
Large Gutta Percha Fuse, for water.12.00

Gates, Molasses—

Stebbin's Pattern.....75&10@80%
Stebbin's Genuine.....60&10&10%
Stebbin's Tinned Ends.....40&10%
Chase's Hard Metal.....50&10%
Bush's.....30%
Lincoln's Pattern.....70@70&10%
Weed's.....20&10%
Boss, ₩ doz:
No. 1, $7; No. 2, $8; No. 3, $9; No. 4, $10.....60&10&10%

Gauges.

Marking, Mortise, &c.....60&10%
Starrett's Surface, Center and Scratch. 25&10%
Wire, low list.....10&10%
Wire, Wheeler, Madden & Co.....10%
Wire, Morse's.....25%
Wire, Brown & Sharpe's.....10@20%
Wire, P. S. & W. Co.....10&10%

Gimlets—

Nail and Spike.....50&10&5%
" Eureka " Gimlets.....40&10%
" Diamond " Gimlets.....₩ gr $5.00
Double Cut, Shepardson's.....45@45&5%
Double Cut, Ives'.....60@60&5%
Double Cut, Douglass'.....40&10%
" Bee," ₩ gr $12.....25@25&5%

Glue—

Le Page's Liquid.....25@25&5%
Upton's Liquid.....35%
Le Page & Co.'s Improved Process 25@25&5%

Glue Pots—See Pots, Glue.

Grease, Axle.

Fraser's.....Keg ₩ ℔ 4¢, Pail ₩ ℔ 5¢
Fraser's, in boxes.....₩ gr $9.50
Dixon's Everlasting, in bxs..₩ doz 1℔. $1.50; 2 ℔ $2.00
Dixon's Everlasting....10-℔ pails, ea. 35¢
Lower grades, special brands, ₩ gr $5.50@$7.00

Grindstones—

Small, at factory.....₩ ton $7.50@9.00

Grindstone Fixtures—See Fixtures, Grindstone.

Hack Saws—See Saws.

Hafts, Awl.

Sewing, Brass Fer.₩ gr, $3.50.....45&10%
Pat. Sewing, Short.$1.00 ₩ doz.....40&10%
Pat. Sewing, Long.....₩ doz $1.20
Pat. Peg, Plain Top.₩ gr $10.00...45&10%
Pat. Peg, Leather Top.₩ gr $12.00.45&10%

Halters.

Covert's, Rope, ⅛-in. Jute.....50&2%
Covert's, Rope, ¼-in. Hemp.....50&2%
Covert's Adj. Rope Halters.....40&2%
Covert's Hemp Horse and Cattle Tie, 50&2%
Covert's Jute Horse and Cattle Ties, 60&10&2%
Covert's Adj. Web Halters.....35&2 %

Hammers—

Handled Hammers—
Maydole's, list Dec. 1, '85.....25&10@35%
Buffalo Hammer Co.
Humason & Beckley
Atha Tool Co.
Fayette R. Plumb.
C. Hammond & Son.
Hartford Hammer Co.
Verree.
} 50@50&10%
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 & 1.75.....50&10%
Nelson Tool Works.....40&10%
Warner & Nobles.....20@25
Peck, Stow & Wilcox.....40%
Sargent's.....33⅓&10%
Heavy Hammers and Sledges—
3 ℔ and under.....₩ ℔ 40¢
3 to 5 ℔.....₩ ℔ 35¢
Over 5 ℔.....₩ ℔ 30¢
} 70@70&10%
Wilkinson's Smiths.....10½¢@11¢₩ ℔

Handcuffs and Leg Irons—See Police Goods.

Handles—

Atkins' No. 1 Loop, ₩ pair, 28¢; No. 2, 13¢; No. 6, 16¢; No. 2 and No. 4 Reversible, 18¢.
Cross-Cut Saw Handles—
Boynton's Loop Saw Handles, 50¢....60%
Champion.....12%
Iron, Wrought or Cast—
Door or Thumb.

Nos.....	0	1	2	3
Per dos....	$0.90	1.00	1.18	1.35 1.50

60&10a1

Roggin's Latches.....₱ doz 30@35¢
Bronze Iron Drop Latches..₱ doz 70¢ net
Jap'd Store Door Handles—Nuts, $1.62; Plate, $1.10; no Plate, $0.88 ..... net
Barn Door, ₱ doz $1.40..... 10&10%
Chest and Lifting.....70%

Wood—

Saw and Plane.....40&10@40&10&5%
Hammer, Hatchet, Axe, Sledge, &c...40%
Brad Awl.....₱ gr $2.00
Hickory Firmer Chisel, ass'd. ₱ gr 4.50
Hickory Firmer Chisel, large. ₱ gr 5.00
Apple Firmer Chisel, ass'd...₱ gr 5.00
Apple Firmer Chisel, large...₱ gr 6.00
Socket Firmer Chisel, ass'd...₱ gr 3.00
Socket Framing Chisel, ass'd. ₱ gr 5.00
} dis 40%
J. S. Smith & Co.'s Pat File.....50%
File, assorted..... ₱ gr 2 75 } 40@
Auger, assorted.....₱ gr 5.00 } 40&10%
Auger, large.....₱ gr 7.00 }
Pat. Auger, Ives'.....30&10%
Pat. Auger, Douglass..... ₱ set $1.25
Pat. Auger, Swan's..... ₱ set $1.00
Hoe, Rake, Shovel, &c.....50&10%

Hangers—

Barn Door, old patterns...60&10&10@70%
Barn Door, New England...60&10&10@70
Samson Steel Anti-Friction.....55%
Orleans Steel.....55%
Hamilton Wrought Wood Track.....55%
U. S. Wood Track 65%
Champion.....60&10%
Rider and Wooster, Medina Mfg. Co.'s list.....70%
Climax Anti-Friction.....60%
Climax Anti-Friction for Wood Track55%
Zenith for Wood Track.....55%
Reed's Steel Arm.....50%
Challenge, Barn Door.....50%
Sterling's Imp'ved (Anti-Friction).65&10%
Victor, No. 1, $15.00; No. 2, $16.50; No. 3, $18.00.....50&2%
Cheritree.....50&10%
Kidder's.....50&10@60%
The Boss.....60&10%
Best Anti-Friction.....60&10%
Duplex (Wood Track).....60&10&5%
Terry's Pat., ₱ doz pr. 4 in. $10.00; 5 in. $12.00.....50&10%
Terry's Steel Anti-Friction Leader 50&10%
Terry's Steel Anti-Friction Ideal..50&10%
Cronk's Patent, Steel Covered.....50@5%
Wood Track Iron Clad, ₱ ft. 10¢.....50 &15@60%
Garrier Steel Anti-Friction.....50&10%
Architect, ₱ set $6.00.....20%
Eclipse.....20&10%
Felix, ₱ set $4.50.....20%
Richards'.....30@30&10%
Lane's Standard.....50&5@50&10%
Lane's New Standard.....50@50&5%
Ball Bearing Door Hanger..20&10@25&10%
Warner's Pat.....20&10@20&10&10%
Stearns' Anti-Friction.20&10@20&10&10%
Stearns' Challenge.....25&10@25&10&10%
Faultless.....40@40&5%
American, ₱ set $6.00.....20&10%
Rider & Wooster, No. 1, 62½¢; No. 2, 75¢.....40%
Paragon, Nos. 1, 2 and 3.....40&10%
Cincinnati.....25&10%
Paragon, Nos. 5, 5½, 7 and 8.....20&10%
Crescent.....60@60&10%
Nickel Cast Iron.....50%
Nickel, Malleable Iron and Steel 40%
Scranton Anti-Friction Single Strap33⅓%
Wild West, 4 in. Wheel, $15.00; 5 in. Wheel, $21.00.....45%
Star.....40&10@40&10&5%
May.....50&5@50&10%
Barry, $6.00.....40&10%

Harness Snaps—See Snaps.

Hatchets—

American Axe and Tool Co.
Blood's
Hunt's
Hurd's
Mann's
Peck's
Underhill's
Buffalo Hammer Co.
Fayette R. Plumb.
C. Hammond & Son...
Kelly's
Sargent & Co.
P., S. & W. Co.
Ten Eyck Edge Tool Co.
} 40 & 10 @ 50&5%
Collins.....10%
Schulte, Lohoff & Co.....50@50&5%

Hay and Straw Knives—See Knives.

Hinges—

Blind Hinges—

Parker.....75&2%
Palmer.....50&5&10%
Seymour .....70&2%
Nicholson.....45&10%
Huffer 50%
Clark's, Nos. 1, 3, 5, 40 and 50 75&10&5@80%
Clark's Mortise Gravity.....50%
Sargent's, Nos. 1, 3, 5, 11, 13 75&10@55&10&5%
Sargent's, No. 12.....77&10&10%
Reading's Gravity.....75&10@75&10&5%
Shepard's
Noiseless.....75&10%
Niagara.....80%
Buffalo.....80%
Clark's Genuine Pattern.....80%
O. S., Lull & Porter.....75&10%
Acme, Lull & Porter.....75%
Queen City Reversible....70&10&5@75%
Clark's Lull & Porter, Nos. 0, 1, 1½, 2, 2½, 3.....75&10&2½%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%

Gate Hinges—

Western.....₱ doz $4.40, 60%
N. E.....₱ doz $7.00, 55%
N. E. Reversible.....₱ doz $5.20, 55&10%
Clark's, Nos. 1, 2, 3.....60&10&5%
N. Y. State.....₱ doz $5.00, 55&10%
Autcmatic.....₱ doz $12.50, 50%
Common Sense.....₱ doz pair $4.50, 50%
Seymour's.....45&10%
Shepard's .....60&10&5%
Reed's Latch and Hinges. ₱ doz $12.00, 50%

Spring Hinges—

Union Spring and Blank Butts.....40%
Gear's Spring Hinge Co.'s list, March 1886 .....20%

Acme.....30%
J. S.....25&10%
Empire and Crown.....20%
Hero and Monarch 65%
American, Gem, and Star.....20%
Oxford.....30%
Barker's Double Acting.....25%
Union Mfg. Co.....25%
Bommer's.....30%
Buckman's.....15@20%
Chicago.....30%
Wiles'.....10%
Devore's.....40%
Rex.....40%
Royal.....60%
Reliable.....60%
Champion.....60%
Bardsley's Patent.....40%
Stearn's.....50&10%

Wrought Iron Hinges

Strap and T.....75&10%
Screw Hook and Strap..... { 6 to 12 in., ₱ D. 4 2-10¢ / 14 to 20 in., ₱ D. 3 7-10¢ / 22 to 36 in., ₱ D. 3 2-10¢
Heavy Welded Hook..... { 6 to 12 in., ₱ D. 4 2-10¢ / 14 to 20 in., ₱ D. 3 7-10¢ / 22 to 36 in., ₱ D. 3 2-10¢
Screw Hook and Eye { ⅜ in., ₱ doz $1.50 / ½ in., ₱ doz $2.45 / ⅝ in., ₱ doz $3.80 } 10%
Rolled Blind Hinges, Nos. 32 and 34 50&10%
Rolled Blind Hinges, Nos. 232 and 234 55&10%
Rolled Plate.....70&10%
Rolled Raised.....70&10%
Plate Hinges "Providence" { 8, 10 & 12 in., ₱ D.....5¢ / over 12 in., ₱ D. ...4¢

Hoes—

Eye—

D. & H. Scovil.....20%
Lane's Crescent Planters Pattern..45&5%
Lane's Razor Blade, Scovil Pattern...30%
Maynard, S. & O. Pat.....45&5%
Sandusky Tool Co.,S. & O. Pat. { 50&10&5
Am. Axe and Tool Co., S. & O. Pat. } @60%
Chattanooga Tool Co., S. & O. Pat..60& 5@60&10%
Grub.....60&10%

Handled—

Garden, Mortar, &c.....70%
Planter's, Cotton, &c.....70%
Warren Hoe.....60%
Magic.....₱ doz $4.00

Hog Rings and Ringers—See Rings and Ringers.

Hoisting Apparatus—See Machines, Hoisting.

Hollow-Ware—See Ware, Hollow.

Holders.

Bag.

Sprengle's Pat.....₱ doz $18.....60%

Bit.

Extension,
Barber's, ₱ doz $15.00.....40@40&10%
Ives, ₱ doz $20.00.....60&5@60&10%
Diagonal.....₱ doz $24.00, 40%
Angular.....₱ doz $24.00, 40&5%

File and Tool—

Bals Pat.....₱ doz $4.00; 25%
Nicholson File Holders.....20%
Dick's Tool Holder.....20%

Hooks—

Cast Iron—

Bird Cage, Sargent's list.....
Bird Cage, Reading..... } 60&10&10%
Clothes Line, Sargent's list..
Clothes Line, Reading list. 60&10@60&10&10%
Ceiling Sargent's list.....55&10&10%
Harness, Reading list..55&10@55&10&10%
Coat and Hat, Sargent's list. 55&10@60&10%
Coat and Hat, Reading .50&10@50&10&10%

Wrought Iron—

Cotton.....₱ doz $1.25
Cotton Pat. (N.Y. Mallet & Handle W'ks). 30%
Tassel and Picture (T. & S. Mfg. Co.)...50%
Wrought Staples, Hooks, &c. See Wrought Goods.

Wire—

Wire Coat and Hat, Gem, list April, 1886.....50%
Wire Coat and Hat, Miles', list April, 1886.....50%
Indestructible Coat and Hat.....45%
Wire Coat and Hat, Standard.....60%
Handy Hat and Coat.....50&10%
Steady Ceiling Hooks.....50&10%
Belt.....80@80&10%
Atlas, Coat and Hat.....60%

Miscellaneous.

Grass, No. 2, $2.00; No. 3, $2.25; No. 4, $2.50
Nolin's Grass.....₱ doz $2.25
Bush.....55@60%
Whiffletree—Patent.....55%
Hooks and Eyes—Malleable Iron. 70@70&10%
Hooks and Eyes—Brass.....60&10&10%
Fish Hooks, American.....50%
Bench Hooks .....See Bench Stops.

Horse Nails—See Nails, Horse.

Horse Shoes—See Shoes, Horse.

Hose, Rubber—

Competition.....75@75&5%
Standard.....60&10&5@60&10&10%
Extra.....50&10@60%
N. Y. B. & P. Co., Para.....25&5%
N. Y. B. & P. Co., Extra.....40@40&5%
N. Y. B. & P. Co., Dundee....50&10 @ 60%

Huskers—

Blair's Adjustable.....₱ gr $8.00
Blair's Adjustable Clipper.....₱ gr 7.00
Hubbard's Solid Steel.....₱ gr 4.50

Indurated Fiber-Ware—See Ware, Indurated Fiber.—

Irons.

Sad—

From 4 to 10, at factory....₱ 100 ℔. $2.30@$2.40
Self-Heating.....₱ doz $9.00 net
Self-Heating, Tailors'....₱ doz $18.00 net
Mrs. Pott's Irons.....40@40&10%
Enterprise Star Irons.....40@40&10%
Cold Handle Sad Irons.....40&10@50%

Ideal Irons new list.50&10@50 & 10&10%
Salamander, Irons.....25%
B. B. Sad Irons, ₱ ℔.....3 @3¼¢
Combined Fluter and Sad Iron, ₱ doz, $15.00.....15%
Fox Reversible, Self-Fluter ₱ doz $24.00
Chinese Laundry (N.E. Butt Co.) 8½¢, 15%
New England.....5¢, 15%
Mahony's Troy Pol. Irons.....25%
Sensible.....20@20&5%
National Self-Heating.....30%

Soldering—

Soldering Coppers.....₱ D. 22 @ 23¢
Covert's Adjustable, list Jan. 1, 1886. 35&2%

Irons, Pinking, per doz., 65¢.

Jack Screws—See Screws.

Jacks, Wagon.

Daisy.....33⅓%
Victor.....33⅓%

Kettles—

	Spun.	Stamped.
Brass, 7 to 17 in., ₱ ℔....	24¢	22 ¢
Brass larger than 17 in., ₱ ℔.....	26¢	24½¢

Enameled and Tea—See Hollow-Ware.

Keys—

Lock Asso'n list Dec. 30, 1886...50&10@ 60&5%
Eagle, Cabinet, &c.....33⅓&2%
Hotchkiss' Brass Blanks.....40%
Hotchkiss' Copper and Tinned.....40%
Hotchkiss' Pad. and Cab.....35%
Ratchet Bed Keys.....₱ doz $4.00, 15%
Wollensak Tinned.....50&10%

Knife Sharpeners—See Sharpeners, Knife.

Knives.

Butcher, Shoe, &c—

Wilson's Butcher Knives.....25@30%
Ames' Butcher Knives.....25%
Foster Bros.' Butcher, &c..... 40%
Nichols' Butcher Knives.....40&10%
Ames' Shoe Knives.....30@25%
Ames' Bread Knives. ₱ doz $1.50, 15@20%
Moran's Shoe and Bread.....30%
Hay and Straw .....See Hay Knives.
Table and Pocket.....See Cutlery.
Corn, Auburn Mfg. Co. Western Pat., ₱2.00
Corn, Auburn Mfg. Co. Crescent....$3.50

Corn—

Bradley's.....10%
Wadsworth's.....25%

Drawing—

Witherby
P. S. & W
Mix .....75@ 75&10 %
New Haven
Merrill .....60&10@60&10&5%
Douglas.....75@75&5%
Watrous.....15&10@25%
L. & I. J. White.....20&5%
Bradley's.....35%
Adjustable Handle.....25@33⅓%
Wilkinson's Folding.....25@25&5%

Hay and Straw—

Lightning, Mfrs'. price ₱ doz $18.00, 25% But jobbers cut this price freely, often selling at $8 @ $8.50.
Wadsworth's.....40&7½@40&10%
Carter's Needle.....₱ doz $11.00@$11.50
Heath's.....₱ doz $13.00@13.50
Auburn Hay, Com. and Spear Point..50%
Auburn Straw.....40%
Nolin's Hay.....₱ doz $7.00 @ $8.00

Mincing.

Am. (2d quality), ₱ gr., 1 blade, $7; 2 blades, $12; 3 blades, $18.....net
Lothrop's.....20&10%
Smith's, ₱ doz, Single, $2.00; Double, $3 40@45%
Knapp & Cowles.....50&10@60%
Buffalo Adjustable.....₱ doz $3.00 .25%
Buffalo Double Adj'table. ₱ doz $5.00 25%

Knobs—

Door Mineral.....60@65%
Door Por. Jap'd.....70@75%
Door Por. Nickel.....$2.00@2.25
Door Por. Plated, Nickel &c.....$2.00@2.25
Drawer, Porcelain.....60&10@60&10&10%
Hemacite Door Knobs.....40&10@50%
Yale & Towne Wood, list Dec., 1885...40%
Furniture Plain.....75¢ gro inch, 10%
Furniture, Wood Screws.....25&10%
Base, Rubber Tip.....70&10&5%
Picture, Judd's.....60&10&10@70%
Picture, Sargent's.....70&10%
Picture, Hemacite.....35&5%
Shutter, Porcelain.....65&10%
Carriage, Jap.....₱ gro 80¢, 60&10%
Bardsley's Wood Door, Shutter, &c..40%

Ladles.—

Melting, Sargent's.....55&10%
Melting, Reading.....35&10%
Melting, Monroe's Pat...₱ doz $4.00, 40%
Melting, P. S. & W.....35&10@40%
Melting, Warner's.....30%

Lanterns—

Tubular—

Plain with Guards, ₱ doz.....$4.00@4.25
Lift Wire, with Guards.....$4.50@4.75
Square Plain, with Guards....$4.00@4.25
Sq. Lift Wire, with Guards....$4.25@4.50
Without Guards, 25¢ ₱ doz less.

Miscellaneous.

Police, Small, $6.00; Medium, $7.25; Large, $9.75.....20@25%

Lawn Mowers—See Mowers, Lawn.

Leaders, Cattle.

Humason, Beckley & Co.'s.....70%
Sargent's.....60%&10%
Hotchkiss.....30%
Peck, Stow & W. Co.....60&10%

Lemon Squeezers—See Squeezers, Lemon.

Lifters, Transom.

Woilensak's:
Class 3 and 4, Bronzed Iron.....50%
Class 3 and 4, Bronze Metal.....25%
Class 3 and 4, Brass..... 35%
Skylight Lifters..... 35%
Crown, Eagle and Shield..... 50%
Reiher's, list Sept. 1, 1890.
Bronzed Iron Rods.....50&10&10&2%
Brass, Real Bronze or Nickel Plate..30%

Excelsior.....50&10&2%
Shaw's.....50&10%
Payson's:
Universal.....60%
Solid Grip.....60%
Imperial.....50&10%

Lines—

Cotton and Linen Fish, Draper's.....50%
Draper's Chalk.....60%
Draper's Masons' Linen, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25.....25%
Cotton Chalk.....55%
Samson, Cotton, No. 4, $2; No. 4½, $2.50; 10%
Silver Lake, Braided, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₱ gro.....25%
Mason's Linen, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50.
Mason's Colored Cotton.....45%
Wire Clothes.. Nos. 12 10 20
100 ft. $4 00 $3 50 $3.00
Ventilator Cord, Samson Braided, White or Drab Cotton..₱ doz $7.50, 20%

Locks, &c.—

Cabinet—

Eagle, Gaylord Parker and Corbin... } List March, '84, rev Jan. 1, '85..33⅓&2%
Deitz, Nos. 36 to 39.....40%
Deitz, Nos. 51 to 63.....40&10%
Deitz, Nos. 86 to 96.....30%
Stoddard Lock Co.....30&33⅓%
"Champion" Night Latches.....40%
Barnes Mfg. Co.....40@40&10%
Eagle and Corbin Trunk.....25&2%
"Champion" Cab. and Combin...33⅓%
Yale.....net prices
Romer's.....25%

Door Locks, Latches, &c.

R. & E. Mfg. Co. ,list Mar.20, 1889..... } 60&10@60 &10&10
Mallory, Wheeler & Co., list July, '88..... } Much lower net prices
Reading Hardware Co., list Feb. 2, '88..... } often made.
Brittan, Graham & Mathes, list Jan. 1890.....60&10&10%
Perkins' Burglar Proof.....60&25%
Plate.....33⅓&2%
Barnes Mfg. Co.....40@40&10%
Yale.....net prices
Delta Flat Key.....30%
L. & C. Round Key Latches.....30&10%
L. & C. Flat Key Latches.....33⅓&10%
Romer's Night Latches.....15%
Shepardson or U. S.....35%
Seed's N. Y. Hasp Lock.....25%

Padlocks—

List Dec. 23, '84.....75@75&10%
Brittan, Graham & Mathes..... 75&10%
Yale Lock Mfg. Co.'s.....net prices
Eagle.....25&2%
Eureka, Eagle Lock Co.....40&2%
Romer's, Nos. 0 to 91.....30%
Romer's Scandinavian, &c., Nos. 100 to 505..15%
A. E. Delts.....40%
Champon Padlocks.....40%
Hotchkiss.....30%
Star.....45%
Horseshoe.....₱ doz, $9. 40@40&10%
Barnes Mfg. Co.....40@40&10%
Nock's.....30%
Brown's Pat.....25%
Scandinavian.....90@90&10%
E. T. Fraim's Keystone Scandavian: Nos. 119, 120, 130 and 140.....90&10% Other Nos.....65%
Ames Sword Co. up to No. 150.....40%
Ames Sword Co. above No. 150.....50%
Slaymaker Barry & Co.
No. 41 line.....45&5%
No. 31 line.....60&5%
No. 21 line.....75&5%

Sash, &c.

Clark's, No. 1, $10; No. 2, $8 ₱ gr. .33⅓%
Ferguson's 33⅓%
Morris and Triumph, list Aug. 16, 1886. 60&2%
Victor.....60&10&2%
Walker's.....10%
Attwell Mfg. Co.....25&33⅓%
Reading.....66⅔&10@66⅔&10&10%
Hammond's Window Springs.....40%
Common Sense, Jap'd, Cop'd and Br'zed.....₱ gr $4.00
Common Sense, Nickel Plated ₱ gr $10.00
Universal.....30%
Kempshall's Gravity.....60%
Kempshall's Model.....60@60&10%
Corbin's Daisy, list Feb. 15, 1886.....70%
Payson's Perfect.....60@60&10%
Hugunin's Sash Balances.....25&5&2%
Hugunin's New Sash Locks.....25&5&2%
Stoddard "Practical".....10%
Ives' Patent.....60&10@60&10&5%
Liesche's, Nos. 100 and 110, ₱ gr $3; 105, $10.00.....20&10%
Davis, Bronze, Barnes Mfg. Co..... 50%
Champion Safety, list March 1, 1888 55@55&5%
Security.....70%
Buckeye.....₱ gro $4.80

Lumber Tools—See Tools, Lumber

Lustre—

Four-ounce Bottles....₱ doz, $1.75; ₱ gross.....$17.00

Machines.

Boring—

	Without Augers.	Upright.	Angular.
Douglas.....	$5.50	$6.75	50%
Snell's, Rice's Pat.	5.50	6.75	...40&10&10
Jennings	5.50	6.75	...45@45&10
Other Machines...	2.35	2.75	.....
Phillips' Patent with Augers ...	7.00	7.50	.....

Fluting.

Knox, 4½-inch Rolls .....$3.25 each } 35%
Knox, 6-inch Rolls..... $3.60 each }
Eagle, 3¼-inch Roll, $2.15.....35%
Eagle, 5¼-inch Roll, $2.85.....35%
Crown, 4½ in., $3.50; 6 in., $4.00; 8 in., $6.50 each 35%
Crown Jewel, 6 in .....$3.50 each, 35%
American, 5 in., $3.00; 6 in., $3.40; 7 in., $4.50 each.....35%
Domestic Fluter .....each, $1.50
Geneva Hand Fluter, White Metal ₱ doz $12, 25%
Crown Hand Fluter, Nos. 1, $15.00; $12.50; 3, $10.00.....30%
Shepard Hand Fluter, No. 85 ₱ doz $15 30 10

Shepard Hand Fluter, No. 110 ₱ doz $11.00 ..... 40%
Shepard Hand Fluter, No. 95 ₱ doz $8.00 ..... 40%
Clark's Hand Fluter. ₱ doz $15.00 ..... 35%
Combined Fluter and Sad Iron, ₱ doz $15.00 ..... 30%
Buffalo ..... ₱ doz $10.00 ..... 10%

Hoisting—
Moore's Hand Hoist, with Lock Brake 20%
Moore's Differential Pulley Block 40%
Energy Mfg. Co's 25%

Mallets.

Hickory ..... 20&10@20&10&10%
Lignumvitæ ..... 20&10@20&10&10%
B. & L. Block Co., Hickory & L. V. ..... 30@30&10%

Mattocks. Regular list ..... 60&10%

Measures—
Standard Fiberware, No. 1, peck, ₱ dozen, $4; ½-peck, $3.50.

Meat Cutters—See Cutters, Meat.

Mills.

Coffee—
Box and Side, List Jan. 1, 1888 ..... 60&2%
American, Enterprise Mfg Co. ..... 20&10@30%
The Swift, Lane Bros ..... 20&10%

Mincing Knives — See Knives, Mincing.

Molasses Gates—See Gates, Molasses.

Money Drawers — See Drawers, Money.

Mowers, Lawn.

Leading makers ..... 60@60&10&5%
Other makers ..... 60&10&5@60&10&10%
Pennsylvania 60%
Continental 60%
New Model ..... 60&10&5%
New Quaker City ..... 60&10&5%
Great American ..... 60&10&5%

Muzzles—
Safety ..... ₱ doz. $3.00, 25 %

Nails.

Cut and Wire. See Trade Report.
Wire Nails, Papered.
Association list, July 15, '89. .75@75&5%
Tack Mfrs.' list ..... 60&10&10%
Wire Nails, Standard Penny.
Card June 1, '89, base ..... $2.70 @ $2.75

Horse—See Trade Report.

	Nos. 6	7	8	9	10
Ausable	.28¢	26¢	25¢	24¢	23¢.

40&5&2%

Clinton, Fin.	19¢	17¢	16¢	15¢	14¢ 30%
Essex	.28¢	26¢	25¢	24¢	23¢.

25&10@25&10&10%

Lyra	19¢	17¢	16¢	15¢	14¢ ..... 30 %
Snowden	19¢	17¢	16¢	15¢	14¢ ..... 30 %
Putnam	.23¢	21¢	20¢	19¢	18¢.

1000 ℔ in year 15%

Vulcan	.23¢	21¢	20¢	19¢	18¢..12½&5%
Northwest'n	.25¢	23¢	22¢	21¢	20¢.

25@25&5%

Globe	.23¢	21¢	20¢	19¢	18¢..25&10%
Boston	.23¢	21¢	20¢	19¢	18¢.

20&5&5&2½%

A. C	.25¢	23¢	22¢	21¢	20¢.

25&10@33½&5%

C. B.-K	.25¢	23¢	22¢	21¢	20¢.

25¢10@33½&5%

Maud S	.25¢	23¢	22¢	21¢	21¢.

40&10&5&2 %

Champlain	.23¢	6¢	25¢	24¢	23¢.

25&1C&10%

New Haven	.28	26¢	25¢	24¢	23¢.

25&10@25&10&10%

Saranac	.23¢	21¢	20¢	19¢	18¢..30&10%
Champion	.25¢	23¢	22¢	21¢	20¢.

10&10&10%

Capewell	.28¢	26¢	5¢	24¢	23¢.

35&5@35&10%

Star	.23¢	21¢	0¢	19¢	18¢.

10&10&10&12½%

Anchor	.23¢	21¢	20¢	19¢	18¢ 3%
Western	.23¢	21¢	20¢	19¢	18¢..40&10%
Empire Bronzed					14 ₱ ℔.

Picture—
Brass Head, Sargent's list ..... 50&10&10%
Brass Head, Combination list ..... 50&10%
Porcelain Head, Sargent's list .50&10&10%
Porcelain Head, Combination list..40&10%
Niles' Patent 40%

Nail Pullers.—See Pullers, Nail.

Nail Sets.—See Sets, Nail.

Nut Crackers.—See Crackers, Nut.

Nuts—
Nuts, off list Dec. 18, 1889: Square. Hex.
Hot Pressed ..... 5.45¢ 6.00¢
Cold Punched ..... 5.00¢ 4.90¢
In lots less than 100 ℔, ₱ ℔, add ½¢; 1-℔ boxes, add 1¢ to list.

Oakum—

Government ..... ₱ ℔ 7@7¼¢
U. S. Navy ..... ₱ ℔ 6@6¼¢
Navy ..... ₱ ℔ 5¼¢@5½¢

Oilers—
Zinc and Tin ..... 65@65&10%
Brass and Copper ..... 50&10&50&10&5%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ₱ doz. 10@10&5%
Malleable, Hammers, Old Pattern, same list 40%
Prior's Pat. or "Paragon" Zinc, 60&10&10%
Prior's Pat. or "Paragon" Brass 50%
Olmstead's Tin and Zinc 60%
Olmstead's Brass and Copper 50%
Broughton's Zinc 60%
Broughton's Brass 50%
Gem P. D. & Co. ..... ₱ gro. $2
Steel, Draper and Williams 50%

Openers, Can.
Messenger's Comet ..... ₱ doz $3.00, 25%
American ..... ₱ gross $3.00
Duplex ..... doz 25¢, 15@20%
Lyman's ..... ₱ doz $3.75, 20%
No. 4 French ..... ₱ doz $2.25, 55@60%
No. 5, Iron Handle ..... ₱ gr $6.00, 45@50%
Eureka ..... ₱ doz $2.50, 10%
Sardine Scissors ..... ₱ doz $2.75@3.00
Star ..... ₱ doz $2.75
Sprague, No. 1, $2.00 2, $2.25; 3, $2.50- 50&10&10%
Excelsior, No. 1, $2.50; No. 2, $1.50...40%
World's Best, ₱ gross, No. 1, $12.00- No. 2, $24.00; No. 3, $36.00 ..... 50&10%
Universal, ₱ doz $3.00 ..... 45 5%
Domestic, ₱ doz $2.50 ..... 45%
Champion ₱ doz $2.00 ..... 5[illegible]

Packing, Steam—

Rubber—
Standard ..... 60&5@65%
Extra ..... 50@50&5%
N. Y. B. & P. Co., Standard..40&10@50%
N. Y. B. & P. Co., Empire ..... 60&5@65%
N. Y. B. & P. Co., Salamander. ₱ ℔ 65¢, 10@15%
Jenkins' Standard. ₱ ℔ 80¢ ..... 25@25&5%

Miscellaneous—
American Packing ..... 10¢@11¢ ₱ ℔
Russia Packing ..... 14¢ ₱ ℔
Italian Packing ..... 13¢@14¢ ₱ ℔
Cotton Packing ..... 15¢@17¢ ₱ ℔
Jute ..... 7¢@8¢ ₱ ℔

Padlocks—See Locks.

Pails.

Galvanized Iron—

	Quarts	10	12	14
Hill's Light Weight, ₱ doz.		$2.75	3.00	3.25
Hill's Heavy Weight, ₱ dz.		3.00	3.25	3.75
Helwig's		2.75	3.00	3.25
Sidney Shepard & Co.		2.35	2.85	3.05
Iron Clad		2.50	2.75	3.00
Fire Buckets		2.75	3.25	3.50

Buckets, see Well Buckets.
Indurated Fibre Ware—25%
Star Pails, 12 qt ..... ₱ doz $6.00
Fire, Stable and Milk, 14 qt .. ₱ doz $7.80
Standard Fibre Ware

	Plain.	Decr'd
Water Pails, 12 qt., per doz.	$4.00	$4.50
Dairy Pails, 14 qt., per doz.	4.50	5.00
Fire Pails, No. 1, 12 qt. per doz	4.50	
Fire Pails, No. 2, 14 qt. per doz	5.00	
Sugar Pails	6.00	6.50
Horse Pails	5.00	
Buggy Pails	4.00	
Slop Jars (bal. trap)	8.00	9.00
Chamber Pails, 14-qt	6.50	7.50

Pans.

Dripping.
Small sizes ..... ₱ ℔ 6¼¢
Large sizes ..... ₱ ℔ 5¾¢
Fry—
Standard List:

No.	0	1	2	3	4
₱ doz.	$3.00	$3.75	$4.25	$4.75	$5.25
No.	5	6	7	8	
₱ doz.	$6.00	$7.00	$8.00	$9.00	

Polished, regular goods ..... 70&10%
Acme Fry Pans ..... 60&10%

Paper and Cloth—

Sand and Emery—
List April 19, 1886 ..... 50@50&10%
Sibley's Emery and Crocus Cloth 30%

Parers.

Apple.
Advance ..... ₱ doz $4.75
Baldwin ..... ₱ doz 5.25
Bonanza ..... each 5.00
Champion ..... ₱ doz 7.25
Daisy ..... ₱ doz 4.00
Dandy ..... each 7.50
Eureka, 1888 ..... each 16.00
Family Bay State ..... ₱ doz 12.00
Favorite ..... ₱ doz 5.00
Gem ..... ₱ doz 5.25
Gold Medal ..... ₱ doz 4.00
Ideal ..... ₱ doz 4.00
Improved Bay State .. ₱ doz 27.00 @ 30.00
Little Star ..... ₱ doz 4.50
Monarch ..... ₱ doz 13.50
New Lightning ..... ₱ doz 5.50
Oriole ..... ₱ doz 4.00
Penn ..... ₱ doz 4.00
Perfection ..... ₱ doz 4.00
Pomona ..... ₱ doz 4.00
Rocking Table ..... ₱ doz 6.00
Turntable ..... ₱ doz 4.50
Victor ..... ₱ doz 13.50
Waverly ..... ₱ doz 4.00
White Mountain ..... ₱ doz 4.00
72 ..... ₱ doz 4.25
76 ..... ₱ doz 5.75
78 ..... ₱ doz. 6.50

Potato—
White Mountain ..... ₱ doz $4.50
Antrim Combination ..... ₱ doz $5.50
Hoosier ..... ₱ doz $13.50
Saratoga ..... ₱ doz $5.50

Pencils—
Faber's Carpenters' ..... high list 50%
Faber's Round Gilt ..... ₱ gro $5.25
Dixon's Lead ..... ₱ gro $4.50
Dixon's Lumber ..... ₱ gro $6.75
Dixon's Carpenters' ..... 40&10%

Picks—
Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00 ..... 60&10%

Picture Nails.—See Nails, Picture.

Pinking Irons.—See Irons, Pinking.

Pins.

Bow—
Humason, Beckley & Co.'s ..... 60&10%
Sargent & Co's. ..... $17 and $18 ..... 60&10%
Peck, Stow & W. Co. ..... 50&10&50&10&5%

Curtain—
Silvered Glass ..... net
White Enamel ..... net

Escutcheon,
Iron, list Nov. 11, 1885 ..... 50&10&50&10&5%
Brass ..... 60@60&5%

Pipe, Wrought Iron—
List September 18, 1889.
1¼ and under, Plain 47½%
1¼ and under, Galvanized 40%
1¼ and over, Plain 60%
1¼ and over, Galvanized 47½%
Boiler Tubes, Iron.
1¾ and under 45%
2 to 4 inch 50%
4-inch and larger 52½%

Planes and Plane Irons—

Wood Planes—
Molding ..... 40&2%
Bench, First Quality ..... 55&2%
Bench, Second Quality ..... 60&2%
Bailey's (Stanley R. & L. Co.). ..... 40&10%

Iron Planes—
Bailey's (Stanley R. & L. Co.). ..... 40&10@40&10&10%
Miscellaneous Planes (Stanley R. & L. Co.) ..... 20&10@20&10&10%
Victor Planes (Stanley R. & L. Co.). ..... 20&10@20&10&10%
Steer's Iron Planes ..... 35@35&10%
Merrien Mal. Iron Co.'s ..... 40@40&10%
Davis's Iron Planes ..... 40@40&10%
Birmingham Plane Co. ..... 50@50&10%
Gage Tool Co.'s Self-Setting ..... 20&10&10%
Chaplin's Iron Planes ..... 40@40&10%
Sargent's ..... 30&10@30&10&10%
Standard Tool Co. ..... 50@50&5%

Plane Irons—
Butcher's ..... $5.00@$5.25 to 2
Buck Bros 30%
Auburn "Thistle" ..... } 35&2%
Ohio ..... }
Sandusky ..... }
S. & I. J. White 25%

Plates.
Felloe ..... ₱ ℔ 6¢@6½¢

Pliers and Nippers—
Button's Patent ..... 50@50&10%
Hall's No. 2, 5 in., $13.50; No. 4, 7 in. $21.00 ₱ doz ..... 20&10@33½%
Humason & Beckley Mfg. Co. ..... 50@50&10%
Gas Pliers 60%
Gas Pliers, Custar's Nickel Plated. .60&5%
Eureka Pliers and Nippers 40%
Russell's Parallel 25%
P. S. & W. Cast Steel 50%
P. S. & W. Tinners' Cutting Nippers, add 5% dis 10%
Carew's Pat. Wire Cutters 20%
Morrill's Parallel, ₱ doz, $12.00 ..... 50&5%
Cronk's 8 in., $15.00; 10 in. $21.00, 40@40&5%

Plumbs and Levels—
Regular List ..... 70&10@70&10&10%
Disston's 50%
Pocket Levels ..... 70&10@70&10&10%
Davis Iron Levels 30%
Davis' Inclinometers ..... 10&10%

Poachers.

Egg.
Buffalo Steam Egg Poachers, ₱ doz, No. 1, $6.00; No. 2, $9.00 ..... 25%

Pokes, Animal—
Bishop's I. X. L. ..... ₱ doz $6.00
Bishop's O. K. ..... ₱ doz $5.25
Bishop's Pioneer ..... ₱ doz $3.75
Bishop's American ..... ₱ doz $2.75
Eagle, Double Stale ..... ₱ doz $5.75
Eagle, Single Stale ..... ₱ doz $3.75
Buckeye, Single Stale ..... ₱ doz $2.75

Police Goods.
R. I. Tool Co., Handcuffs, $15.00 ₱ doz 10%
R. I. Tool Co., Leg Irons, $25.00 ₱ doz 10%
Tower's 25%
Daley's Improved Handcuffs: 2 Hands, Polished, ₱ doz $48.00; Nickeled, $57.00; 3 Hands, Polished, ₱ doz $72.00; Nickeled, $84.00 ..... 25%
J. P. Lovell's Police Goods 25%

Polish, Metal.
Prestoline 30%
Prestotine Paste 33⅓%
Gaston's Silver Compound 33⅓%

Polish, Stove.
Joseph Dixon's ..... ₱ gro $6.00, 10%
Gem ..... ₱ gro $4.50, 10%
Gold Medal ..... ₱ gro $6.00, 25%
Mirror ..... ₱ pro $6.00, —%
Lustro ..... ₱ gro $4.75
Ruby ..... ₱ gro $3.75
Rising Sun, 5 gro lots ..... ₱ gro $5.50
Dixon's Plumbago ..... ₱ ℔ 8¢
Boynton's Noon Day, ₱ gro 13.00
Parlor Pride Stove Enamel .. ₱ gro
Yates' Liquid, 2 3 5 10 gal. ... ₱ gal ... $0.80 .70 .60 .50
Yates Standard Paste Polish, 10-℔ cans, ₱ ℔ 12½¢
Jet Black ..... ₱ gro $3.50
Japanese ..... ₱ gro $3.50
Fireside ..... ₱ gro $2.50
Diamond O. K. Enamel ..... ₱ gro $19.00
Bonnell's Liquid Stove Polish. ₱ gro $9.00
Bonnell's Paste Stove Polish.. ₱ gro $6.00
Black Eagle Benzine Paste, 5 and 10 ℔ cans ..... 12½¢
Black Jack Water Paste, 5 and 10 ℔ cans ..... 12½¢
Nickel Plate Paste ..... ₱ gro $6.00

Poppers, Corn—
Round or Square, 1 qt.. ₱ gr $10.00@10.50
Round or Square, 1½ qt.. ₱ gr $15@15.50
Round or Square, 2 qt.. ₱ gr $18.50@19.00

Post Hole and Tree Augers and Diggers—See Diggers, Post Hole, &c.

Potato Parers—See Parers, Potato.

Pots.

Glue—
Tinned 40%
Enameled ..... 40&5%
Family, Howe's "Eureka" 40%
Family, L. F. C.'s "Handy" 50%

Presses.

Fruit and Jelly—
Enterprise Mfg. Co. ..... 20&10@30%
Henis ..... ₱ doz $3.50
Shepard's Queen City 40%

Pruning Hooks and Shears.—See Shears.

Pullers.

Nail.
Curtiss Hammer ..... ₱ doz $9.00
Giant, No. 1 ..... ₱ doz. $13.00, 10%
Giant, No. 2 ..... ₱ doz, $15.00, 10%
Pelican ..... ₱ doz, $9.00, 25%

Pulleys—
Hot House, Awning, &c. ..... 60&10%
Japanned Screw ..... 60&10%
Brass Screw ..... 60&10%
Japanned Side ..... 66⅔&10%
Japanned Clothes Line ..... 60&10%
Empire Sash Pulley ..... 55@60%
Moore's Sash, Anti-Friction 50%
Hay Fork, Solid Eye, $4.00; Swivel, $4.50 ..... 50&10@50&10&5%
Hay Fork, "Anti-Friction," 5 in. Solid, $5.70 ..... 50%
Hay Fork, "F" Common and Pat. Bushed 20%
Hay Fork, Tarbox Pat. Iron 20%
Hay Fork, Reed's Self-Lubricating ...60%
Shade Rack 45%
Tackle Blocks ..... See Blocks
Moore's Anti-Friction 5 in. Wheel, ₱ doz $12.00 40

Pumps—
Cistern, Best Makers ..... 60@60&10%
Pitcher Spout, Best Makers ..... 67½@70%
Pitcher Spout, Cheaper Goods. 70@70&5%

Punches—
Saddlers' or Drive, good, ₱ doz. ...60@65%
Bemis & Call Co.'s Cast Steel Drive. .50&5%
Bemis & Call Co's Springfield Socket .50&5%
Spring, good quality ..... ₱ doz $2.50@2.60
Spring, Leach's Pat. 15%
Bemis & Call Co.'s Spring and Check .. 40%
Solid Tinners', P.S. & W. Co., ₱ doz $1.44, 55%
Tinners' Hollow Punches P.S. & W. Co. 20&2%
Rice Hand Punches 15%
Avery's Revolving 40%
Avery's Saw-Set and Punch. See Saw Sets.

Rail—

Sliding Door. Wr't Brass, ₱ ℔ 35¢ 15%
Sliding Door, Bronzed Wr't Iron .. ₱ ft. 7¢
Sliding Door, Iron, Painted, ₱ foot 4¢. 40%
Barn Door Light. In. ½ ¾ ⅞
Per 100 feet $2.00 2.50 3.10, 10%
B. D. for N. E. Hangers—

	Small.	Med.	Large.
Per 100 feet	$2.15	2.70	3.25..net
Terry's Steel Rail, ₱ foot			4½¢
Victor Track Rail, 7¢ ₱ foot			50&2%
Carrier Steel Rail, ₱ foot			4½¢
Moore's Wrought Iron			25%

Rakes—
Cast Steel, Association goods 70%
Cast Steel, outside goods 60&10&10@70&5%
Malleable ..... 70@70&5%
Gibbs Lawn Rake ..... $12.00, 50&15
Canton Lawn Rake ..... $9.00, 50&10
Ft. Madison Prize Bow Brace and Peerless 65%
Fort Madison Steel Tooth Lawn Rake, $6.00 ..... 25%

Razors—
J. R. Torrey Razor Co 20%
Wostenholme and Butcher, $10.00 to £. 10%
Jordan's AAA1, list Nov. 1, 1889 ..... 50%
Jordan's Old Faithful, list Nov. 1, '89. 50%
Electric ..... List net

Razor Strops—See Strops, Razor.

Rings and Ringers.

Bull Rings—
Union Nut Co. 55%
Sargent's ..... 60%&10@70&5%
Hotchkiss' low list 30%
Humason, Beckley & Co.'s ..... 70&10%
Peck, Stow & W. Co's. .50&10@50&10&10%
Ellrich Hdw. Co., White Metal, low list. 50@50&10%

Hog—
Top of the Hill Ringers ..... ₱ doz $2.00
Top of the Hill Rings ..... ₱ doz $1.25
Hill's Improved Ringers ..... ₱ doz $4.25
Hill's Old Style Ringers ..... ₱ doz $2.75
Hill's Tongs ..... ₱ doz $4.50
Hill's Rings ..... ₱ doz bxs $2.15@2.25
Perfect Rings ..... ₱ doz bxs $1.60@1.70
Perfect Ringers ..... ₱ doz $2.15@2.25
Blair's Hog Ringers ..... ₱ doz $2.25@2.50
Blair's Hog Rings ..... ₱ doz 90¢@$1.00
Champion Ringers ..... ₱ doz $2.00
Champion Rings, Double ..... ₱ doz $2.25
Brown's Ringers ..... ₱ doz $2.00
Brown's Rings ..... ₱ doz $1.25@1.30

Rivets and Burrs—
Iron, list Nov. 17, '87 ..... 40%
Copper ..... 50&10%
Coppered Iron, Bertina Brand 40%

Rivet Sets—See Sets.

Rods—
Stair, Brass ..... 25&2%
Stair, Black Walnut .. .. ₱ doz 40¢

Rollers—
Barn Door, Sargent's list ..... 60&10&10%
Acme Moore's Anti-Friction 55%
Union Barn Door Roller 70%

Rope—
Manufacturers' prices:
Manila, ½ in. and larger ₱ ℔ 15 ¢
Manila, ⅜ in. ₱ ℔ 15½¢
Manila, ¼ and 5-16 in. ₱ ℔ 15¾¢
Manila Tarred Rope ..... ₱ ℔ 14½¢
Manila, Hay Rope ..... ₱ ℔ 15 ¢
Sisal, ½ inch and larger ₱ ℔ 10½¢
Sisal ⅜ in. ₱ ℔ 11 ¢
Sisal, ¼ and 5-16 in. ₱ ℔ 11½¢
Sisal, Hay Rope ..... ₱ ℔ 10½¢
Sisal, Tarred Rope ..... ₱ ℔ 10 ¢
Sisal, Medium Lathe Yarn. ₱ ℔ 9½¢
New Zealand, ½ in. and larger ₱ ℔ 9½¢
New Zealand, ⅜ inch, ₱ ℔ 9¾¢
New Zealand, ¼ and 5-16 inch, ₱ ℔ 10 ¢
New Zealand, Hay Rope ..... ₱ ℔ 9½¢
New Zealand, Tarred Rope ..... ₱ ℔ 8¾¢
Cotton Rope ..... ₱ ℔ 15@18¢ net
Jute Rope ..... ₱ ℔ 7½¢

1½% for cash in 10 days.

Wire—
List May 1, 1886.
Iron ..... 32½&2½%
Iron, Galvanized ..... 40&2½%
Cast Steel ..... 40&2½%

Rules—
Boxwood ..... 80&10&10@80&10&10&5%
Ivory ..... 50@50&10%
Starrett's Rules and Straight Edges, Steel ..... 25&10%

Sad Irons—See Irons, Sad.

Sand and Emery Paper and Cloth—See Paper and Cloth, Sand and Emery.

Sash Cord—See Cord, Sash.

Sash Locks—See Locks, Sash.

Sash Weights—See Weights, Sash.

Sausage Stuffers or Fillers—See Stuffers or Fillers, Sausage.

Saws—
Disston's Circular 45%
Disston's Cross Cuts 45%
Disston's Hand 20%
Woodrough & McParlin.
Hand, Panel and Rip 25%
Narrow Champion Cross Cuts with Handles, ₱ foot ..... 20¢
Champion Thin Back Cross Cuts, ₱ foot ..... 28¢
Champion Extra Thin Back Cross Cuts, ₱ foot ..... 31¢
One Man Champion Cross Cuts, ₱ foot ..... 40¢
Wheeler, Madden & Clemson Mfg. Co.
Hand, Panel and Rip 30%
Narrow Champion Cross Cuts with Handles, ₱ foot ..... 20¢
Champion Thin Back Cross Cuts, ₱ foot ..... 28¢
Champion Extra Thin Back Cross Cuts, ₱ foot ..... 31¢
One Man Champion Cross Cuts, ₱ ft. 40¢

Atkins' Circular Shingle and Heading ..... dis 50%
Atkins' Silver Steel Diamond X Cuts ..... ₱ foot 70¢
Atkins' Special Steel Dexter X Cuts ..... ₱ foot 50¢
Atkins' Special Steel Diamond X Cuts ..... ₱ foot 32¢
Atkins' Champion and Electric Tooth X Cuts ..... ₱ foot 30¢
Atkins' Hollow Back X Cuts. ..₱ foot 20¢
Atkins' Mulay, Mill and Drag 40%
Atkins' One-Man Saw, with handles. ₱ foot 40¢
Peace Circular and Mill 45%
Peace Hand Panel and Rip 25%
Peace Cross Cuts 45%
Richardson's Circular and Mill 45%
Richardson's X Cuts 45%
Richardson's Hand, &c. 25%

Hack Saws—

Griffin's, complete ..... 40&10@50%
Griffin's Hack Saw, Blades ..... 40&10@50%
Star Hack Saws and Blades 25%
Eureka and Crescent 25%

Scroll—

Lester, complete, $10.00 ..... 25%
Rogers, complete, $4.00 ..... 25%
Barnes' Builders' and Cabinet Makers', $15 ..... 25%
Barnes' Scroll Saw Blades 35%

Saw Frames—See Frames, Saw.

Saw Sets—See Sets, Saw.

Saw Tools—See Tools, Saw.

Scales—

Hatch, Counter, No. 171, good quality, ₱ doz $21.00
Hatch, Tea, No. 161....₱ doz $6.75@$7.00
Union Platform, Plain ..... $2.10@2.30
Union Platform, Striped ..... $2.30@2.30
Chatillon's Grocers' Trip Scales 50%
Chatillon's Eureka 25%
Chatillon's Favorite 40%
Family, Turnbulls ..... 30@30&10%
Richie Bros.' Platform 40%

Scale Beams—See Beams, Scale

Scissors, Fluting 45%

Scrapers—

Adjustable Box Scraper (S. R. & L. Co.) $6.50 ..... 30&10%
Box, 1 Handle ..... ₱ doz $4.00. 10%
Box, 2 Handle ..... ₱ doz $6.00. 10%
Defiance Box and Ship ..... 20&10%
Foot ..... 50&10@5%
Ship, Common ..... ₱ doz $3.50 net
Ship, R. I. Tool Co 10%

Screen Window and Door Frames—See Frames.

Screw Drivers—See Drivers, Screw.

Screws.

Bench and Hand—

Bench, Iron ..... 55&10@55&10&10%
Bench, Wood, Beech ..... ₱ doz $2.25
Bench, Wood, Hickory ..... 20&10%
Hand, Wood ..... 25&10@25&10&5%
Lag, Blunt Point, list Jan. 1, 1890. 75&10%
Coach and Lag, Gimlet Point, list Jan. 1, 1890 ..... 75@75&10%
Bed ..... 25&5%
Hand Rail, Sargent's ..... 60@&10%
Hand Rail, H. & B. Mfg. Co...70&10@75%
Hand Rail, Am. Screw Co 75%
Jack Screws, Millers Falls list..50@50&5%
Jack Screws, P. S. & W 35%
Jack Screws, Sargent..60&10@60&10&5%
Jack Screws Stearns' ..... 40@40&10%

Cork—

Humason & Beckley Mfg. Co..40&10@50%
Williamson's ..... 33⅓@33⅓&5%
Hows Bros & Hulbert 35%

Machine—

Flat Head, Iron ..... .55%
Round Head, Iron 50%

Wood—

List March 1, 1889.
Flat Head Iron 50%
Round Head Iron 40%
Flat Head Brass 45%
Round Head Brass 35%
Flat Head Bronze 45%
Round Head Bronze ..35%
Extra 10 @ 10&5 % often given.
Rogers' Drive Screws 66⅔%

Scroll Saws—See Saws, Scroll.

Scythe Snaths—See Snaths, Scythe.

Sets.

Awl and Tool.

Aiken's Sets, Awls and Tools, No. 20, ₱ doz $10.00 ..... 55&10%
Fray's Adj. Tool Hdls., Nos. 1, $12; 2, $18; 3, $12; 4, $9 ..... 25@25&10%
Miller's Falls Adj. Tool Hdls.. Nos. 1, $12, 2, $18 ..... 25%
Henry's Combination Haft...₱ doz $6.50
Brad Sets, No. 42, $10.50; No. 43, $12.50..70&10&5%
Stanley's Excelsior: No. 1, $7.50; No. 2, $4.00; No. 3, $5.50 ..... 30&10%

Nail—

Square ..... ₱ gr., $4.00@$4.25
Round ..... ₱ gr. $3.25
Buck Bros 27½%
Cannon's Diamond Point...₱ gr., $12, 20%

Rivet.

Regular list ..... 50&10%

Saw—

Stillman's Genuine...₱ doz $5.00@7.75, 40&5%
Stillman's Imita ..... ₱ doz $3.25@5.25, 40&5@40&10%
Common Lever ..... ₱ doz $2.00, 40&5%
Morrill's No. 1, $15.00; Nos. 3&4, $24.00. 40&10@50%
Leach's...No. 0, $8.00; No. 1, $15, 15@20%
Nash's ..... 20&10@20&10&10%
Hammer, Hotchkiss $5.50, 10%
Hammer, Bemis & Call Co.'s new Pat. 30&5%
Bemis & Call Co.'s Lever and Spring Hammer ..... 30&5%
Bemis & Call Co.'s Plate 10%
Bemis & Call Co.'s Cross Cut 12½%
Aiken's Genuine ..... $13.00, 50&10%
Aiken's Imitation ..... $7.00, 55&5%
Hart's Pat. Lever 20%
Disston's Star 25%
Leopold ..... 40&10@50%
Atkin's Lever ..... ₱ doz No. 1, $6.00
Atkin's Criterion ..... ₱ doz No. 1, $6.00
Croissant (Keller), No. 1, $15.00; No. 2, $24.00 ..... 40&10%
Avery's Saw Set and Punch 50%
Chieftain H. R. Co.'s Superior ..... ₱ doz $15, 50%

Sharpeners, Knife.

Parkin s.
Applewood Handles...₱ doz $6.00, 40%
Rosewood or Cocobolo. ₱ doz $9.00, 40%

Shaves, Spoke.

Iron 45%
Wood 30%
Bailey's (Stanley R. & L. Co.) ..... 40&10%
Stearns' ..... 30&10%
Cincinnati ..... 25&10%

Shears—

American (Cast) Iron...75&10@75&10&5%
Barnard's Lamp Trimmers...₱ doz $3.75
Tinners' ..... 20&2%
Seymour's, List, Dec., 1881. 60&10&10@60&10&10&5%
Heinisch's, List, Dec., 1881. 60&10&10@60&10&10&5%
Heinisch's Tailor's Shears 33⅓%
First quality C. S. Trimmers..80@80&10%
Second quality C. S. Trimmers. 80&10@80&10&10%
Acme Cast Shears ..... 10&10%
Diamond Cast Shears 10%
Clipper ..... 10&10%
Victor Cast Shears ..... 75&10@75&10&5%
Howe Bros. & Hulbert, Solid Forged Steel 40%
Chicago Drop Forge & F. Co., Solid Steel Forged 60%
Clauss Shear Co., Japanned 70%
Clauss Shear Co., Nickeled, same list. 60%
Electric ..... List net

Pruning Shears and Hooks.

Disston's Combined Pruning Hook and Saw ..... ₱ doz $18.00, 20&10%
Disston's Pruning Hook, ₱ doz $12.00, 20&10%
E. S. Lee & Co.'s Pruning Tools 40%
Pruning Shears, Henry's Pat, ₱ doz $3.75@4.00 net
Henry's Pruning Shears, ₱ doz $4.25@4.50 net
Wheeler, M. & C. Co.'s Combination. ₱ doz $12.00, 20%
Dunlap's Saw and Chisel, ₱ doz $8.50, 30%
J. Mallinson & Co., No. 1, $5.25; No. 2 7.25
P., S. & W. Co 60%

Tinners', &c.—

Shears and Snips (P. S. & W.) ..... 20@25%
Snips, J. Mallinson & Co 33⅓%

Sheaves—

Sliding Door—

M. W. Co., list July, 1888..50&10@60&5%
R. & E., list Dec. 18, 1885 ..... 55&20%
Corbin's list ..... 60&10&2%
Patent Roller ..... 60&10&2%
Patent Roller, Hatfield's 75%
Russell's Anti-Friction, list Dec. 18, 1885 ..... 60&2%
Moore's Anti-Friction 50%

Sliding Shutter—

R. & E. list Dec. 18, 1885 ..... 60&10&2%
Sargent's list ..... 60&10%
Reading list ..... 60&10&10%

Ship Tools—

L. & I. J. White ..... 20&5%

Shoes, Horse, Mule, &c.—

Horse—

Burden's, Perkins', Phœnix, at factory. $4.00

Mule—

Add $1 ₱ keg to above prices.

Ox, Wrought—

Ton lots ..... ₱ ℔ 9¢
1000 ℔ lots ..... ₱ ℔ 9½¢
500 ℔ lots ..... ₱ ℔ 10¢

Shot—

(Eastern prices 2¢ off, cash, 5 days.

Drop, ₱ bag, 25 ℔ $1.50
Drop, ₱ bag, 5 ℔ ..... .35
Buck and Chilled, ₱ 25-℔ bag 1.75
Buck and Chilled, ₱ 5-℔ bag ..... .40

Shovels and Spades—

Ames' Shovels, Spades, &c., list Nov. 1, 1885 ..... 20%
NOTE.—Jobbers frequently give 5@7½% extra on above.
Griffith's Black Iron ..... 50&10%
Griffith's C. S. ..... 60@60&10%
Griffith's Solid C. S. R. R. Goods 20%
Old Colony (Sanford Fork & Tool Co). 35%
St. Louis Shovel Co ..... 20@20&7½%
Hussey, Binns & Co ..... 15@25%
Hubbard & Co ..... 20@20&7½%
Lehigh Mfg. Co ..... 50&10%
Payne Pettebone & Son, list January, 1886 ..... 30%
Remington's (Lowman's Pat.) ..... 30&10@40%
Rowland's, Black Iron ..... 50&10%
Rowland's Steel ..... 60&5@60&10%

Shovels and Tongs—

Iron Head ..... 60&10@60&10&5%
Brass Head ..... 60&10&10%

Sieves—

Mann's Tin Rim ..... 50&25%
Buffalo Metallic, S. S. & Co ..... 50&25%
Shaker (Earler's Pat.) Flour Sifters.... ₱ doz $2.00; ₱ gr $21.60
Electric ..... ₱ gr $21.00
A. & W. Sifters ..... ₱ doz 2.00
Hunter's ..... ₱ doz $3.00
Smith's Adjustable Sifters.... ₱ doz $2.00
Smith's Adjustable Milk Strainer. ₱ doz $2.00
Smith's Adjustable T. & C. Strainer. ₱ doz. $1.25

Sieves, Wooden Rim—

	Iron.	Plated.
Mesh 18, Nested, ₱ doz..	80¢	$1.00
Mesh 20, Nested, ₱ doz..	95¢	1.10
Mesh 24, Nested, ₱ doz..	$1.15	1.25

Skeins, Thimble—

Western list ..... 75&5@75&10%
Columbus Wrt. Steel..Special net prices
Coldbrookdale Iron Co 60%
Utica P. S. T. Skeins 60%
Utica Turned and Fitted 35%

Slates—

School, by case ..... 50@50&10%

Snaps, Harness, &c.—

Anchor (T. & S. Mfg. Co.) 65%
Fitch's (Bristol) ..... 50&10%
Hotchkiss 10%
Andrews 50%
Sargent's Patent Guarded ..... 70&10&10%
German, new list ..... 40&10%
Covert ..... 50&2%
Covert, New Patent ..... 50&5&2%
Covert, New R. E ..... 60&2%
Covered Spring ..... 60&10&10%

Snaths, Scythe.

List ..... 50&10@50&10&5%

Soldering Irons—See Irons, Soldering.

Spittoons, Cuspidors, &c.

Standard Fiberware—

Cuspidors, 8¼-inch, ₱ doz., No. 5, $8; No. 5X $9.
Spittoons, Daisy, 8-inch, No. 1, $4; 10 and 11 inch, $6.

Spoke Shaves—See Shaves, Spoke.

Spoke Trimmers—See Trimmers, Spoke.

Spoons and Forks—

Tinned Iron—

Basting, Cen. Stamp, Co.'s list....70&10%
Solid Table and Tea, Cen. Stamp. Co.'s list ..... 70&10%
Buffalo S. S. & Co ..... 33⅓&2%

Silver-Plated—(4 mos. or 5% cash 30 days).

Meriden Brit. Co., Rogers....40, 15, 10&5%
C. Rogers & Bros ..... 40, 15, 10&5%
Rogers & Bro ..... 40, 15, 10&5%
Reed & Barton ..... 40&10%
Wm. Rogers Mfg. Co ..... 40, 15, 10, 5&5%
Simpson, Hall, Miller & Co. 40, 15, 10&5%
Holmes & Edwards Silver Co ..... 40, 15, 10, 5&5%
L. Boardman & Son 60%

Miscellaneous.

Holmes & Edwards Silver Co.:
No. 67 Mexican Silver ..... 50&10&5%
No. 30 Silver Metal ..... 50&10&5%
No. 24 German Silver ..... 50&10&5%
No. 50 Nickel Silver ..... 50&5%
No. 49 Nickel Silver ..... 50&10&5%
Wm. Rogers Mfg. Co.
Rogers' Silver Metal ..... 50, 10&5%
18% Rogers' German Silver ..... 60&5%
22% Rogers' Nickel Silver ..... 50&5%
German Silver ..... 50@50&5%
German Silver, Hall & Elton ..50&5% cash
Nickel Silver ..... 50&5@50&10&5% cash
Britannia 60%
Boardman's Nickel Silver ..... 50&5% cash
Boardman's Britannia Spoons, case lots ..... 60&5% cash

Springs, Door.

Torrey's Rod, regular size....₱ doz $1.80
Gray's, ₱ gr., $20.00 ..... 20%
Bee Rod ₱ gr., $20.00 ..... 20%
Warner's No. 1, ₱ doz, $2.50; No. 2, $3.30 ..... 40&10@50%
Gem (Coil), list April 19, 1886 ..... 10%
Star (Coil), list April 19, 1886 ..... 20%
Victor (Coil) ..... 60@60&10%
Champion (Coil) ..... 60&10@60&10&10%
Philadelphia, 5 in., $5.00; 8 in., $7.75.. %
Cowell's....No. 1, ₱ doz, $18.00; No. 2, $15.00 ..... 50%
Rubber, complete, ₱ doz, $4.50...55&10%
Hercules 50%
Shaw Door Check and Spring..25@30@35%
Elliptic, Concord, Platform and Half Scroll ..... 60@60&5%
Cliff's Bolster Springs 25%

Squares—

Steel and Iron } ..... 80 &10%
Nickel-Plated } ..... 80 &10%
Try Square and T Bevels...60&10@60&10 &10%
Disston's Try Square and T Bevels..... 50%
Winterbottom's Try and Miter....30&10%
Starrett's Micrometer Caliper Squares. 25%
Avery's Flush Bevel Squares 40%
Avery's Bevel Protractor 50%

Squeezers.

Fodder.—

Blair's ..... ₱ doz $2.00
Blair's "Climax" ..... ₱ doz $1.25

Lemon—

Porcelain Lined, No. 1....₱ doz $6.00, 25&20%
Wood, No. 2 ..... ₱ doz $3.00, 35%
Wood, Common ..... ₱ doz $1.70@1.75
Dunlap's Improved ..... ₱ doz $3.75, 20%
Sammis....No. 1, $5.00; No. 2, $9; 12, $18 ₱ doz ..... 25&10%
Jennings' Star ..... ₱ doz $2.50
The Boss ..... ₱ doz $2.50
Dean's..Nos. 1, ₱ doz $6.50; 2, $3.35; 3, $1.90; Queen, $2.50
Little Giant ..... 50@50&5%
King ..... 40&5%
Hotchkiss Straight Flash.... ₱ doz $12.00

Standard Fiber Ware—See Ware, Standard Fiber.

Staples.

Blind—

Barbed, ½ in. and larger..... ₱ ℔ 7@7½¢
Barbed, ⅜ in ..... ₱ ℔ 8@8½¢
Fence Staples, Galvanized } Same price as B'rb Wire. See Trd. Rep.
Fence Staples, Plain ..... }

Steelyards ..... 40&10@50%

Stocks and Dies—

Blacksmith's
Waterford Goods ..... 40@40&10%
Butterfield's Goods ..... 40@40&10%
Lightning Screw Plate ..... 25@30%
Reece's New Screw Plates....35%&5@40%
Reversible Ratchet 30%
Gardner 25%

Stops, Bench.

Morrill's ..... ₱ doz $9, 50%
Hotchkiss's ..... ₱ doz $5. 10@10&10%
Weston's, No. 1, $10; No. 2, $9.25&10&5%
McGill's ..... ₱ doz $3..... 10%
Cincinnati ..... 25&10%

Stone—

Hindostan No. 1, 3¢; Axe, 3½¢; Slips No. 1, 4½¢
Sand Stone ..... ₱ ℔ 2½¢
Washita Stone, Extra ..... ₱ ℔ 20@21¢
Washita Stone, No. 1 ..... ₱ ℔ 15@16¢
Washita Stone, No. 2 ..... ₱ ℔ 11@12¢
Washita Slips, No. 1, Extra.. ₱ ℔ 37@40¢
Washita Slips, No. 1 ..... ₱ ℔ 25@26¢
Arkansas Stone, No. 1, 4 to 6 in ₱ ℔ $1.50
Arkansas Stone, No. 1, 6 to 9 in ₱ ℔ $1.85
Turkey Oil Stone, 4 to 8 in ..... ₱ ℔ 40¢
Turkey Slips ..... ₱ ℔ $1.00@1.50
Lake Superior, Chase ..... ₱ ℔ 16¢
Lake Superior Slips, Chase...₱ ℔ 31@32¢
Seneca Stone, Red Paper Brand.... ₱ ℔ 18@20¢
Seneca Stone, High Rounds..₱ ℔ 20@25¢
Seneca Stone, Small Wheels..₱ gro $24.00

Stove Polish—See Polish, Stove.

Stretchers, Carpet.

Cast Steel, Polished ..... ₱ doz $2.25
Cast Iron, Steel Points ..... ₱ doz 80¢
Socket ..... ₱ doz $1.75
Bullard's ..... 25@25&10%

Strops, Razor—

Genuine Emerson ..... 60@60&5%
Imitation " .... ₱ doz $2.00, 20&10&5%
Torrey's 20%
Badger's Belt and Com ..... ₱ doz $2.00
Lamont Combination ..... ₱ doz $4.00
Jordan's Pat. Padded, list Nov. 1, '89. 50%
Electric ..... List net

Stuffers or Fillers, Sausage—

Miles' "Challenge," ₱ doz $20, 50@50&5%
Perry ..... ₱ doz, No. 1, $15.00; No. 0, $21.00 ..... 50&5@50&10%
Draw Cut No. 4, each $30.00 ..... 20%
Enterprise Mfg. Co ..... 20&10@30%
Silver's ..... 40&10%

Sweepers, Carpet.

Bissell No. 5 ..... ₱ doz $17.00
Bissell No. 7 New Drop Pan. ₱ doz $19.00
Bissell, Grand ..... ₱ doz $36.00
Grand Rapids ..... ₱ doz $24.00
Crown Jewel, No. 1, $18.00; No. 2, $19.00; No. 3, $20.00
Magic ..... ₱ doz $15.00
Jewel ..... ₱ doz $17.00
Improved Parlor Queen.
Nickeled ..... ₱ doz $27.00
Japanned ..... ₱ doz $24.00
Excelsior ..... ₱ doz $22.00
Garland ..... ₱ doz $18.00
Parlor Queen ..... ₱ doz $24.00
Housewife's Delight ..... ₱ doz $15.00
Queen ..... ₱ doz $16.00
Queen, with band ..... ₱ doz $18.00
King ..... ₱ doz $30.00
Weed, Improved ..... ₱ doz $18.00
Hub ..... ₱ doz $16.00
Cog-Wheel ..... ₱ doz $16.00
Conqueror ..... ₱ doz $22.00
Easy ..... ₱ doz $22.00
Monarch ..... ₱ doz $22.00
Goshen ..... ₱ doz $21.00

Tacks, Brads, &c.—

List Oct. 19, 1889. Standard Weights.

Carpet Tacks—
American Iron, Blued 77½%
Am'ican Iron, Tin'd or Cop'd. 77½%
Steel, Plain or Bright 75%
Steel, Tinned or Coppered 75%
Swedes Iron, Blued 75%
Swedes Iron, Tinned or Cop'd 75%
American Iron Cut Tacks 75%
Swedes Ir. Uphol'rs' Tacks, Blued. 75%
Swedes Iron Upholsterers' Tacks, Tinned 77½%
Gimp and Lace Tacks, Blued 75%
Gimp and Lace Tacks, Tinned ..77½%
Swedes Iron Basket or Trimmers' Tacks ..... 70&10%
Miners' Tacks 77½%
Bill-Posters' or Railroad Tacks ..75%
Bill-Posters' or Railroad Tacks, Tinned 77½%
Copper Tacks 40%
Copper Finish. & Trunk Nails..... 40%
Cigar Box Nails 50%
Zinc Glaziers' Points 50%
Picture Frame Points 50%
Looking-Glass Tacks 50%
Brush Tacks 60%
Tin-Capped Trunk Nails 60%
Finishing Nails 70%
Trunk and Clout Nails, Black and Tinned 72½%
Common and Patent Brads 70%
Hungarian Nails 70%
Basket and Chair Nails 65%
Leathered Carpet Tacks 40%

Miscellaneous—

Double-Pointed 82½%
Wire Carpet Nails ..... 50&10%
Plymouth Rock Steel Carpet Tacks..25%

Extra 10 @ 10&10 %

Wire Brads & Nails, see Nails, Wire.
Steel-Wire Brads, R. & H. Mfg. Co.'s list.....60&10%

Tapes, Measuring—

American.....33⅓@33⅓&5%
Spring.....40%
Chesterman's, Regular list.....25@30%

Thermometers—

Tin Case.....80@80&10%

Thimble Skeins—See Skeins.

Ties, Bale- Steel

Standard Wire, list.....50&10&5%

Tinners' Shears, &c.—See Shears, Tinners', &c.

Tinware—

Stamped, Japanned and Pieced, list Jan. 20 1887.....70&10@70&10&5%

Tire Benders, Upsetters, &c—
See Benders and Upsetters, Tire.

Tools.

Coopers'—

Bradley's.....20%
Barton's.....20@20&5%
L. & I. J. White.....20&5%
Albertson Mfg. Co.....25%
Beatty's.....30%
Sandusky Tool Co.....30@30&5%
Chaves, Cincinnati Tool Co.....20%

Lumber.

Ring Peavies, "Blue Line".....₩ doz $20.00
Ring Peavies, Common.....₩ doz $18.00
Steel Socket Peavies.....₩ doz $21.00
Mall. Iron Socket Peavies.....₩ doz $19.00
Cant Hooks, "Blue Line".....₩ doz $16.00
Cant Hooks, Common Finish..₩ doz $14.00
Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish.....$16.00
Cant Hooks, Mall. Socket Clasp, Common Finish.....₩ doz $14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish.....₩ doz $14.00
Cant Hooks, Clip Clasp, Common Finish.....₩ doz $12.00
Hand Spikes.....₩ doz 6 ft., $15.00; 8 ft., $20.00
Pike Poles, Pike & Hook, ₩ doz., 12 ft., $11.50; 14 ft., $12.50; 16 ft., $14.50; 18 ft., $17.50; 20 ft., $21.50.
Pike Poles, Pike only, ₩ doz, 12 ft., $10.00; 14 ft., $11.00; 16 ft., $13.00; 18 ft., $16.00; 20 ft., $20.00.
Pike Poles, not ironed, ₩ doz, 12 ft. $6.00; 14 ft., $7.00; 16 ft., $9.00; 18 ft., $12.00; 20 ft., $16.00.
Setting Poles, ₩ doz, 12 ft., $14.00; 14 ft., $15.00; 16 ft., $17.00
Swamp Hooks.....₩ doz $18.00

Saw.

Atkins' Perfection.....₩ doz $12.00
Atkins' Excelsior.....₩ doz $6.00
Atkins' Giant.....₩ doz $4.00

Tobacco Cutters—See Cutters, Tobacco.

Transom Lifters — See Lifters, Transom.

Traps—

Game—

Newhouse.....40@40&5%
Oneida Pattern.....70&10%
Game, Blake's Patent.....40&10&5%

Mouse and Rat—

Mouse Wood, Choker, ₩ doz holes, 11@18¢
Mouse, Round Wire.....₩ doz $1.50, 10%
Mouse, Cage, Wire.....₩ doz $2.50, 10%
Mouse, Catch-'em-alive.....₩ dz $2.50 15%
Mouse, Bonanza.....₩ gr
Mouse, Delusion.....₩ gr
Rat, Decoy.....₩ gr $10.00, 10%
Ideal.....₩ gr $10.00
Cyclone.....₩ gr $5.25
Hotchkiss Metallic Mouse, 5-hole traps, ₩ doz., 90¢; in full cases, ₩ doz.....75¢
Hotchkiss Imp. Rat Killer..₩ gro $18.50
Hotchkiss New Rat Killer...₩ gro $16.50
Schuyler's Rat Killer.....₩ gro $15.00

Triers—

Butter and cheese.....25%

Trimmers, Spoke.

Bonney's.....₩ doz $10.00, 50%
Stearns'.....20&10%
Ives', No. 1, $15.00; No. 2, $12.00 ₩ doz.
.....55&10%
Douglas'.....₩ doz $9.00, 20%
Cincinnati.....25%

Trowels—

Lothrop's Brick and Plastering.
.....20&10&5@35%
Reed's Brick and Plastering.....15%
Disston's Br'k and Plastering.....25%
Peace's Plastering.....25%
Clement & Maynard's.....20%
Rose's Brick.....15@20%
Brade's Brick.....25%
Worrall's Brick and Plastering.....20%
Garden.....70%

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list, '82.....40%

Tubes, Boiler—

See Pipe.

Twine—

Flax Twine—	BC.	B.
No. 9, ¼ and ⅛ ℔ Balls	26¢	34¢
No. 12, ¼ and ⅛ ℔ Balls	25¢	33¢
No. 18, ¼ and ⅛ ℔ Balls	22¢	32¢
No. 24, ¼ and ⅛ ℔ Balls	22¢	32¢
No. 36, ¼ and ⅛ ℔ Balls	20¢	31¢

No. 264, Mattrass, ¼ and ⅛ ℔ Balls.52@54¢
Chalk Line, Cotton, ½ ℔ Balls.....25¢
Mason Line, Linen, ⅛ ℔ Balls.....55¢
2-Ply Hemp, ¼ and ⅛ ℔ Balls (Spring Twine).....15⅛¢
3-Ply Hemp, 1 ℔ Balls.....16¢@16⅛¢
3-Ply Hemp, 1¼ ℔ Balls.....15¢@15⅛¢
Cotton Wrapping, 5 Balls to ℔ ..15¢@16¢
2, 3, 4 and 5-Ply Jute, ⅛ ℔ Balls.....10¢
Wool.....6¼¢@6¾¢
Paper.....13¢@14¢
Cotton Mops, 6, 9, 12 and 15 ℔ to doz..18¢

Vises—

Solid Box.....50&10@50&10&5%

Parallel—

Fisher & Norris Double Screw.....15&10%
Stephens'.....25@30%
Parker's.....20@25%
Wilson's.....55%
Howard's.....40%
Bonney's.....40&10%
Millers Falls.....40@40&10%
Trenton.....40@5@40&10%
Merrill's.....15@20%
Sargent's.....60@10&10%
Backus and Union.....40%
Double Screw Leg.....15&10%
Prentiss.....20@25%
Simpson's Adjustable.....40%
Moore's.....20%

Saw Filers—

Bonney's, Nos. 2 & 3, $15.00.....40&10%
Stearn's.....33⅓&10@33⅓&10&10%
Stearn's Silent Saw Vises.....33⅓@35%
Sargent's.....60@10&10%
Hopkins'.....₩ doz $17.50, 10%
Reading.....40&10%
Wentworth.....20&10%
Combination Hand Vises.....₩ gr $43.00
Cowell Hand Vises.....20%
Bauer's Pipe Vises.....10%
Cincinnati.....25&10%

Wagon Boxes—See Boxes, Wagon.

Washer Cutters—See Cutters Washer.

Wagon Jacks—See Jacks, Wagon.

Ware, Hollow, Enameled, &c.

Cast Iron, Hollow—

Stove Hollow-Ware—
Ground.....55&5@60&5%
Unground.....65&10@65&10&5%
White Enameled-Ware—
Maslin Kettles.....60&10&5%
Boilers and Saucepans.....40%
Tinned Boilers and Saucepans.....40%
Rustless Hollow-Ware.....50@50&5%
Gray Enameled-Ware—
Stove.....50%
Maslin Kettles.....60&10&10%
Boilers and Saucepans.....40&5%

Enameled—

Agate and Granite Ware, list Jan. 1, 1880.....33⅓&10%
Ironclad Enameled Ware...dis 33⅓&10%

Kettles—

Galvanized Tea-Kettles—

Inch....	6	7	8	9
Each....	55¢	60¢	65¢	75¢

Standard Fiber—

	Per Dozen. Plain.	Dec'r'd
Wash-Basins, 10¼ in.	$2.00	$2.25
Wash-Basins, 12 in.	2.25	2.75
Keelers, 11¼ in.		4.00
Cuspidors.		8.00
Spittoons, "Daisy," 8 in....	4.00	4.50
Peck Measure.	4.00	
Half-peck Measure.	3.50	

See also Pails.

Indurated Fiber—25%

Spittoons, No. 2, ₩ doz.....$9.00
Basins, Ringed, ₩ doz., No. 2, $4.80; No. 3.....$4.20
Washtubs, Nested, Nos. 0, 1, 2 and 3 (4 pieces), ₩ nest.....$7.50
Keelers, Nested, Nos. 1, 2, 3 and 4 (4 pieces), ₩ nest.....$3.70
Butter Bowls 15, 17 and 19-inch (3 pieces), ₩ nest.....$2.25
Liquid Measures, pt., qt., 2 qt. and funnell (4 pieces) ₩ set.....$3.00
Dry Measures, 1, 2, 4, 8 and 16 qts. (5 pieces), ₩ set.....$3.00
See also *Pails.*

Silver Plated, Hollow—
4 mo. or 5 % cash in 30 days.

Reed & Barton.....
Meriden Britannia Co.....
Simpson, Hall, Miller & Co.....
Rogers & Brother.....
} 40&5%

Hartford Silver Plate Co.....
William Rogers Mfg. Co.....
} 40&5&5%

Washers—

Size.....	¼	5-16	⅜	½	⅝	¾	1
Washers....	6¾	5½	4½	3½	3	3	3

In lots less than 200 ℔, ₩ ℔, add ¼¢, 5-℔ boxes 1¢ to list.

Wedges—

Iron.....₩ ℔ 3½¢
Steel.....₩ ℔ 4 ¢

Weights, Sash—

Solid Eyes.....₩ ton $18@$19

Well Buckets, Galvanized—See Buckets, Well, Galvanized.

Wheels, Well.

8 in., $2.25; 10 in., $2.70; 12 in., $3.25

Wire and Wire Goods—

Iron—

Market,
Br. & Ann., Nos. 0 to 18.....72½%
Cop'd, Nos. 0 to 18.....70%
Galv., Nos. 0 to 18.....62½%
Tin'd, Tinned list Nos. 0 to 18.....62½%
Stone,
Br. and Ann'd, Nos. 16 to 18.....72½%
Bright and Ann'd, Nos. 19 to 26.....75%
Br. and Ann'd, Nos. 27 to 36.....77½%
Tinned.....
Tinned Broom Wire, 18 to 21, ₩ ℔...5¼¢
Galvanized Fence, Nos. 8 and 9.....65%
Annealed Fence, Nos. 8 and 9.....75%
Annealed Grape, Nos. 10 to 14.....75%
Brass, list Jan. 18, 1884.....25%
Copper, list Jan. 18, 1884.....25%
Barb Fence.....See Trade Report
Annealed Wire on Spools.....50%
Malin's Steel and Tin'd on Spools.....50%
Malin's Brass and Cop. on Spools.....40%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$5.00 to $5.50
Steel Music Wire, Nos. 12 to 20..55¢ ₩ ℔
Picture Wire.....New list 50%
Wire Clothes Lines, see Lines.

Bright Wire Goods—

Standard list.....85%

Wire Cloth and Netting.

Painted Screen Cloth, good quality, ₩ 100 sq. ft., $1.60 @ $1.75
Galvanized Wire Netting.....70@10@75%

Wire Rope—See Rope, Wire.

Wrenches—

American Adjustable.....40%
Baxter's Adjustable "S".....40&10@50%
Baxter's Diagonal.....40&10@50%
Coes' Genuine.....50&25%
Coes' "Mechanics'".....50&10&25%
Girard Standard.....65&10%
Lamson & Sessions' Engineers'..60&10%
Lamson & Sessions' Standard....70&10%
P. S. & W. Agricultural.....
Girard Agricultural.....
Lamson & Sessions' Agric'l..
} 75@75&10

Bemis & Call's
Pat. Combination.....35%
Merrick's Pattern.....35%
Brigg's Pattern.....25%
Cylinder or Gas Pipe.....40&5%
No. 3 Pipe.....40&10%
Aiken's Pocket (Bright).....$6.00, 50&10%
The Favorite Pocket.....₩ doz $4.00, 40%
Webster's Pat. Combination.....25%
Boardman's.....20&10%
Always Ready.....25&5%
Alligator.....50%
Donohue's Engineer.....20&10%
Acme, Bright.....50&2%
Acme, Nickeled.....40&2%
Walker's.....55&2%
Diamond Steel.....55&2%
Cincinnati Brace Wrenches.....25&10%
Tafts' Vise Wrench.....55&10&3%

Wringers, Clothes—

List March 11, 1889, 2% cash.

Wrought Goods—

Staples, Hooks, &c., list Jan. 12, 1888.
.....80&15@85%

PAINTS, OILS AND COLORS.—Wholesale Prices.

Animal and Vegetable Oils.

Linseed, City, raw..per gal.	62	@	64
Linseed, City, boiled.....	64	@	66
Linseed, Western, raw.....	60	@	..
Lard, City, Extra Winter..	53	@	54
Lard, City, Prime.....	52	@	..
Lard, City, Extra No. 1.....	45	@	48
Lard, City, No. 1.....	42	@	43
Lard, Western, prime.....	..	@	52
Cotton-seed, Crude, prime..	..	@	28
Cotton-seed, Crude, off grades.....	22	@	26
Cotton-seed, Summer Yellow, prime.....	32	@	33
Cottonseed, Summer Yellow, off grades.....	29	@	31
Sperm, Crude.....	65	@	66
Sperm, Natural Spring.....	66	@	68
Sperm, Bleached Spring....	71	@	73
Sperm, Natural Winter.....	77	@	76
Sperm, Bleached Winter...	78	@	81
Whale, Crude.....	..	@	45
Whale, Natural Winter.....	49	@	..
Whale, Bleached Winter....	51	@	..
Whale, Extra Bleached.....	54	@	55
Sea Elephant, Bleached Winter.....	60	@	62
Menhaden, Crude, Sound...	21	@	26
Menhaden, Crude, Southern	..	@	..
Menhaden, Light Pressed..	25	@	26
Menhaden, Bleached W'ter.	31	@	32
Menhaden, Extra Bleached	35	@	..
Tallow, City, prime.....	..	@	45
Tallow, Western, prime....	..	@	..
Cocoanut, Ceylon.....	7¾	@	..
Cocoanut, Cochin.....	8	@	..
Cod, Domestic.....	31	@	32
Cod, Foreign.....	33	@	34
Red Elaine.....	31	@	34
Red Saponified..... ₩ ℔	..	@	4½
Bank.....per gal	24	@	..
Straits.....	25	@	..
Olive, Italian, bbls.....	82	@	83
Neatsfoot, prime.....	62½@		75
Palm, prime, Lagos....₩ ℔	6½@		7

Mineral Oils.

Black, 29 gravity, 25 @ 30 cold test.....per gal	8½@		9
Black, 29 gravity, 15 cold test.....	9	@	9½
Black, 29 gravity, summer.	7	@	8
Cylinder, light, filtered.....	15	@	20
Cylinder, dark, filtered.....	14	@	20
Cylinder, dard, st'm refined	10	@	18
Paraffine, 23½ @ 24 gravity.	12½@		13
Paraffine, 25 gravity.....	11½@		12
Paraffine, 28 gravity.....	10½@		11
Paraffine, red, 21 @ 22 gr'ty	..	@	14½
Paraffine, red, 23½@23 gr'ty	12½@		13

Paints and Colors.

Barytes, Prime White..... ₩ ton.	$21.00	@	$22.50
Barytes, Amer. refined...	20.00	@	....
Barytes, Amer. No. 1....	18.00	@	....
Barytes, Amer. No. 2.....	16.00	@	....
Barytes, Amer., off-color.	13.00	@	15.00
Blue, Celestial..... ₩ ℔	6	@	8
Blue, Chinese.....	50	@	55
Blue, Prussian.....	25	@	40
Blue, Ultramarine.....	10	@	30
Brown, Spanish.....	½@		1
Brown, Vandyke, Amer..	3	@	3½
Brown, Vandyke, English	6	@	8
Black, American Drop....	8	@	10
Black, English Drop.....	12	@	14
Black, Frankfort, Drop...	5	@	18
Black, Lamp, common...	12	@	18
Black, Lamp, medium....	19	@	25
Black, Lamp, prime.....	27	@	33
Carmine, No. 40, in bulk.	3.10	@	..
Carmine, No. 40, in boxes or barrels.....	3.20	@	..
Carmine, No. 40, in ounce bottles.....	4.20	@	..
Chalk, in bulk.... ₩ ton.	2.75	@	2.85
Chalk, in bbls..₩ 100 ℔.	.30	@	35
China Clay, English..... ₩ ton.	13.50	@	18.00
China Clay, Southern...	10.00	@	12.00
Cobalt Oxide, prep'd....	2.90	@	....
Cobalt Oxide, black.. .... lots 100 ℔.	2.60	@	....
Cobalt, Oxide, black..... less 100 ℔.	2.65	@	....
Crocus Martus, Engl. ₩ ℔.	1½@		2¼
Crocus, American	1½@		2½
Green, Paris, in bulk.....	14	@	14½
Green, Paris, 170 @ 175 ℔ kegs.....	14½@		15
Green, Paris, small pack.	16	@	21
Green, Chrome, ordinary	8	@	13
Green, Chrome, pure....	22	@	25
Lead, Eng., B.B. white....	9	@	1o
Lead, Amn. White, dry or in oil: Kegs, lots less than 1000 ℔..		@	7½
Kegs, lots 1000 ℔ to 5 tons.		@	7
Kegs, lots 5 tons to 12 tons..		@	6¾
Kegs, lots 12 tons and over..		@	6¾
Lead, White, in oil, 25 ℔ tin pails, add to keg price.....		@	½
Lead, White, in oil, 12½ ℔ tin pails, add to keg price.....		@	1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price.		@	2½
Lead, Red, bbls. and ½ bbls....	6¼	@	7¼
Lead, Red, kegs.....	6¾	@	7½
Litharge, kegs.....	6¾	@	7½
Litharge, bbls. and ½ bbls.....	6¼	@	7¼

TERMS, &C.—Lead and Litharge.—On lots of 1000 ℔ or over, 60 days' time or 2¼ % discount for cash if paid within 15 days of date of invoice.

Ocher, Rochelle.....	1.35	@	1¼
Ocher, French Washed....	1½@		2½
Ocher, German Washed....	1½@		3
Ocher, American.....	½@		1¼
Orange Mineral, English...	8½@		9½
Orange Mineral, French....	9	@	9½
Orange Mineral, German ..	8½@		9½
Orange Mineral, American.	8	@	8½
Paris White, English Cliff-stone.....	90	@	1.10
Paris White, American.....	70	@	80
Red, Indian, English.....	5½@		7
Red, Indian, American....	2	@	6
Red, Turkey.....	9	@	14
Red, Tuscan.....	9	@	11
Red, Venetian, American.. ₩ 100 ℔.	1.00	@	1.35
Red, Venetian, English....	1.25	@	1.75
Sienna, Italian, Burnt and Powd. ₩ ℔	5	@	6¼
Sienna, Ital., Burnt Lumps	1½@		3½
Sienna, Ital., Raw, Powd..	5	@	6½
Sienna, Ital., Raw Lumps..	2	@	3½
Sienna, American, Raw....	1½@		1¾
Sienna, American, Burnt and Powdered.....	1½@		1¾
Talc, French.....	1½@		1½
Talc, American.....	1	@	1½
Terra Alba, Fr'ch. ₩ 100 ℔	72½@		80
Terra Alba, English	80	@	85
Terra Alba, American No. 1	70	@	75
Terra Alba, American No. 2	38	@	40
Umber, Turkey, Bnt. and Powd.,.. ..... ₩ ℔	3½@		4
Umber, Turkey Bnt. Ln	2½@		3
Umber, Turkey, Raw and Powdered.....	3½@		..
Umber, Turkey, R'w Lmps	2½@		2¾
Umber, Turkey, Bnt. Amer.	1½@		1¾
Umber, Turkey, R'w Amer.	1¼@		1½
Yellow, Chrome.....	10	@	25
Vermilion, Americ'n, Lead..	11½@		13
Vermilion, Quicks'er, bulk.	..	@	75
Vermilion, Quicks'er, bags.	..	@	76
Vermilion, Quicksilver, smaller pkgs.....	..	@	80
Vermilion, English Import	85	@	..
Vermilion, Imitation, Eng.	8	@	25
Vermilion, Trieste.....	87½@		90
Vermilion, Chinese.....	90	@	95
Whiting, Common. ₩ 100 ℔	40	@	45
Whiting, Gilders'.....	50	@	55
Zinc, American, dry.... ₩ ℔	4	@	4¼
Zinc, French, Red Seal.....	..	@	8½
Zinc, French, Green Seal..	..	@	8¾
Zinc, French, V. M. X.....	..	@	7
Zinc, Antwerp, Red Seal....	..	@	7¼
Zinc, Antwerp, Green Seal	..	@	8½
Zinc, German, L. Z. O.....	..	@	6¾
Zinc, V. M. in Poppy Oil, G. Seal, lots of 1 ton and over.....	10¾@		11¼
lots less than 1 ton	11	@	11¾
Zinc, V. M. in Poppy Oil, Red Seal,.....	..	@	..
lots of 1 ton and over....	10	@	10½
Lots of less than 1 ton....	10¾@		10¾

DISCOUNTS.—French Zinc.—Discounts to buyers of 10- bbl. lots of one or assorted grades, 1 %; 25 bbls, 2 %, 50 bbls, 4 %. No discount allowed on less than bbl. lots.

Colors in Oil.

Blue, Chinese..... ₩ ℔	35	@	40
Blue, Prussian.....	29	@	45
Blue, Ultramarine.....	12	@	18
Brown, Vandyke.....	7	@	12
Green, Chrome.....	8	@	13
Green, Paris.....	16	@	18½
Sienna, Raw.....	7	@	13
Sienna, Burnt.....	7	@	13
Umber Raw.....	7	@	10
Umber, Burnt	7	@	10

Glue.

Low Grade..... ₩ ℔	8	@	10
Cabinet.....	12	@	14
Medium White.....	13	@	15
Extra White.....	17	@	20
French.....	10	@	22½
English.....	10	@	15
Irish.....	12	@	15

CURRENT METAL PRICES.

OCTOBER 1, 1890.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market reports.

IRON AND STEEL.

Bar Iron from Store.

Common Iron:	
⅜ to 2 in. round and square.. } 1 to 6 in. x ⅜ to 1 in..... }	₩ lb 2.00 @ 2.10¢
Refined Iron:	
⅜ to 2 in. round and square.. } 1 to 4 in. x ⅜ to 1¼ in..... }	₩ lb 2.10 @ 2.30¢
4¼ to 6 in. x ⅜ to 1 in..... }	
1 to 6 in. x ¼ and 5-16	₩ lb 2.30 @ 2.50¢
Rods—¾ and 11-16 round and sq.	₩ lb 2.20 @ 2.40¢
Bands—1 to 6 x 3-16 to No. 12	₩ lb 2.40 @ 2.60¢
"Burden Best" Iron, base price	₩ lb 2.90 @ ....¢
Burden's "H. B. & S." Iron, base price	₩ lb 2.70 @ ....¢
"Ulster"	₩ lb 2.90 @ ....¢
Norway Bars	3.90 @ ....¢
Norway Shapes	4.00 @ ....¢

Merchant Steel from Store.

	Per pound.
Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots	2¾¢
Best Cast Steel, base price in small lots	8 ¢
Best Cast Steel Machinery, base price in small lots	5¢

Sheet Iron from Store.

	Common American.	R. G.	Cleaned.
10 to 16	₩ lb 3.00 @ 3.00¢	3.50 @	....¢
17 to 20	₩ lb 3.25 @ 3.25¢	3.60 @	3.75 ¢
21 to 24	₩ lb 3.35 @ 3.35¢	3.75 @	....¢
25 and 26	₩ lb 3.45 @	3.75 @	....¢
27	₩ lb 3.55 @ 3.62½¢	4.00 @	....¢
28	₩ lb 3.75 @ ....¢	4.25 @	....¢
	B. B.		2d qual.
Galv'd, 14 to 20,	₩ lb, 5.00 @ ...	4.75½ @	....¢
Galv'd, 21 to 24,	₩ lb, 5.37½ @ ...	5.12½ @	....¢
Galv'd, 25 to 26,	₩ lb, 5.75 @ ...	5.50 @	....¢
Galv'd, 27	₩ lb, 6.12½ @ ...	5.85½ @	....¢
Galv'd, 28	₩ lb, 6.50 @ ...	6.23 @	....¢
Patent Planished	₩ lb A 10¢		B, 9¢
Russia	₩ lb 9½¢ @ 10¢		
American Cold Rolled B. B.	₩ lb 5¢ @ 7¢		
Craig Polished Sheet Steel	₩ lb, 8½¢		

English Steel from Store.

Best Cast	₩ lb 15 ¢
Extra Cast	₩ lb 16½ @ 17 ¢
Swaged, Cast	₩ lb 16 ¢
Best Double Shear	₩ lb 15 ¢
Blister, 1st quality	₩ lb 12 ¢
German Steel, Best	₩ lb 10 ¢
2d quality	₩ lb 9 ¢
3d quality	₩ lb 8 ¢
Sheet Cast Steel, 1st quality	₩ lb 15 ¢
2d quality	₩ lb 14 ¢
3d quality	₩ lb 12½¢
R. Mushet's "Special"	₩ lb 45 ¢
" " "Titanic"	₩ lb 20 ¢

METALS.

Tin.

	Per lb
Banca, Pigs	23½¢
Straits, Pigs	23¾¢
Straits in Bars	25 ¢

Tin Plates.

			Per box.
	Charcoal Plates.—Bright.		
Melyn Grade	IC, 10 x 14	@	$6.25
" "	IC, 12 x 12	@	6.50
" "	IC, 14 x 20	@	6.25
" "	IC, 20 x 28	@	12.75
" "	IX, 10 x 14	@	7.75
" "	IX, 12 x 12	@	8.00
" "	IX, 14 x 20	@	7.75
" "	IX, 20 x 28	@	15.50
" "	DC, 12½ x 17	@	5.75
" "	DX, 12½ x 17	@	7.25
Calland Grade	IC, 10 x 14	@	6.25
" "	IC, 12 x 12	@	6.50
" "	IC, 14 x 20	@	6.15
" "	IX, 10 x 14	@	7.40
" "	IX, 12 x 12	@	7.65
" "	IX 14 x 20	@	7.40
Allaway Grade	IC, 10 x 14	@	5.50
" "	IC, 12 x 12	@	5.65
" "	IC, 14 x 20	@	5.50
" "	IC, 20 x 28	@	11.00
" "	IX, 10 x 14	@	6.67
" "	IX, 12 x 12	@	6.80
" "	IX, 14 x 20	@	6.65
" "	IX, 20 x 28	@	13.50
" "	DC, 12½ x 17	@	5.15
" "	DX, 12½ x 17	@	6.15
	Coke Plates.—Bright.		
Steel Coke.—IC, 10 x 14, 14 x 20		@	$5.12½
10 x 20		@	7.25
20 x 28		@	10.25
IX, 10 x 14, 14 x 20		@	6.00
BV Grade.—IC, 10 x 14, 14 x 20		@	5.12½
	Charcoal Plates.—Terne.		
Dean Grade.—IC, 14 x 20		@	$5.10
20 x 28		@	10.20
IX, 14 x 20		@	5.90
20 x 28		@	11.80
Abecarne Grade.—IC, 14 x 20		@	4.95
20 x 28		@	9.97
IX, 14 x 20		@	5.93
20 x 28		@	11.80

Tin Boiler Plates.

IXX, 14 x 26	112 sheets	$13.00 @ $13.00
IXX, 14 x 28	112 sheets	@ 13.25
IXX, 14 x 31	112 sheets	@ 14.75

Copper.

DUTY: Pig, Bar and Ingot, 4¢; Old Copper, 3¢ ₩ lb. Manufactured (including all articles of which Copper is a component of chief value), 45 % ad valorem.

Ingot.

Lake	@ 17½¢
Baltimore Grade	@ 15 ¢

Sheet and Bolt.

Prices adopted by the Association of Copper Manufacturers of the United States, June 27, 1890, being quotations for all sized lots.

Not wider than	Not longer than	And longer than	Weights per square foot and prices per pound. Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
30	72		25	25	25	26	27	28	31	33
30	72		25	25	25	26	28	30	34	....
36	96		25	25	25	27	29	33	36	....
36	96		25	25	26	28	30	34	38	....
48	96		25	25	27	29	31	35	....	....
48	96		25	25	28	30	32	36	....	....
60	96		25	25	30	32	37	....	....	....
60	96		25	26	31	....	....	....	....	....
84	96		26	27	....	....	....	....	....	....
84	96		27	28	....	....	....	....	....	....
Over 84 in. wide			28	30	....	....	....	....	....	....

All Bath Tub Sheets	16 oz.	14 oz.	12 oz.	10 oz.
Per pound	$0.27	0.29	0.31	0.35

Bolt Copper, ⅝ inch diameter and over, per pound ..... 25¢

Circles, 60 inches in diameter and less, 3 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Copper Bottoms, Pits and Flats.

	Per pound.
14 ounce to square foot and heavier	29¢
12 ounce and up to 14 ounce to square foot	30¢
10 ounce and up to 12 ounce	32¢

Circles less than 8 inches diameter 2 cents per pound additional.

Circles over 18 inches diameter are not classed as Copper Bottoms.

Tinning.

Tinning sheets on one side, 10, 12 and 14 x 48 each ..... 8¢
Tinning sheets on one side, 30 x 60 each ..... 30¢
For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each ..... 15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each ..... 12¢
For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.) each ..... 12¢
Tinning sheets on one side, other sizes, per square foot ..... 2½¢
For tinning both sides double the above prices.

Planished Brass and Copper.

14 x 48.
14 and 16 oz. and heavier..31¢. By the case...30¢ ₩ lb
12 oz. and lighter.....33¢. By the case...32¢ ₩ lb
24 x 48 and 30 x 60.
14 and 16 oz. and heavier..44¢. 12 oz.....37¢ ₩ lb

Seamless Brass and Copper Tubes.

O. G.	N. G.	⅜	½	⅝	¾	⅞	1	1¼
8-14	6-12	39	35	32	31	30	29	26
15	13	40	35	33	32	31	30	27
16	14	41	36	34	33	32	31	27
17	15	42	37	35	32	33	32	28
18	16	44	38	36	34	33	32	29
19	17	45	39	37	36	35	34	31
20	18-19	46	41	39	38	37	36	33
21	20	48	43	41	40	39	38	36
22	21	50	44	42	41	40	39	38
23	22	52	46	44	43	42	41	41
24	23	55	48	46	45	43	42	43
25	24	58	51	48	47	46	45	47

Copper Bronze and Gilding Tube, 3¢ ₩ lb additional.

Brazed Brass Tubing. (To No. 20, inclusive.

Above 5-16 inch to 3 inch, inclusive	35¢
Plain, above 3 inch	45¢
Plain, 5-16 inch	45¢
Plain, ¼ inch	60¢
Plain, 3-16 inch	$1.00
Plain, ⅛ inch	1.50
Fancy Tubing, Brass, to No. 20, inclusive	43¢ ₩ lb
bronze Tubing, 3¢ ₩ lb more than Brass.	
Discount from list	25 @ ... %

Roll and Sheet Brass.

Discount from list ..... 20 %

High Brass Rods.

Over 1 inch diameter	20¢
¼ inch to 1 inch diameter, both inclusive	25¢
No. 8 and less than ¼ inch diameter	28¢
Smaller than No. 8	33¢
Hexagon, Octagon and Square, 2¢ ₩ lb advance over Round Rods.	

Spelter.

Duty: Pig, Bars and Plates, $1.50 ₩ 100 lb.

Western Spelter	6½¢
"Bertha"	8¢

Zinc.

Duty; Sheet, 2½¢ ₩ lb.

600 lb casks	6½¢
Per lb	7½¢

Lead.

Duty: Pig, $2 ₩ 100 lb. Old Lead, 2¢ ₩ lb. Pipe and Sheets, 3¢ ₩ lb.

American	5½¢
Bar	6 ¢
Pipe, subject to trade discount	7½¢
Tin-Lined Pipe, subject to trade discount	15%
Block Tin Pipes, subject to trade discount	45¢
Sheet, subject to trade discount	8½¢

Solder.

½ @ ½ (Guaranteed)	15½¢
No. 1	12½¢
Extra Wiping	11½¢ @ 12½¢

The prices of the many other qualities of Solder in the market indicated by private brands vary according to composition.

Antimony.

Cookson	₩ lb 23 ¢
Hallett's	" 21½¢

ALUMINUM.

Prices in Ingots.

$2.00 ₩ lb in lots of 1000 lb and over.
$2.25 ₩ lb in lots of 500 lb and over.
$2.50 ₩ lb in lots of 100 lb and over.

Prices Per Pound on Rolled Sheets.

(Brown & Sharpe, Standard Gauge.)

Wider than. / And including.	2 in. 10 in.	10 in. 14 in.	14 in. 18 in.	18 in. 22 in.	22 in. 24 in.
Up to No. 20 inclusive	$2.50	$2.60	$2.80	$3.00	$3.20
Nos. 21, 22, 23 and 24	2.60	2.70	2.90	3.10	3.30
Nos. 25 and 26	2.70	2.80	3.00	3.20	3.40
Nos. 27 and 28	2.80	2.90	3.10	3.30	3.50

Sheets, thinner than No. 28 gauge and wider than 24 inches, special prices not less than $5 per pound.
Add 35 cents per pound for sheets cut to particular widths and lengths.
Sheets rolled to .001 in. and under, 50 cents per ounce.
Leaf in books, 20 cents per book; $2 per pack of 10 books, sheets 5 x 5 inches.

Aluminum Tubing.

From $4 per pound upward, according to size and thickness of walls.

Aluminum Castings.

From 50 cents upwards per pound extra over the cost of the metal in ingots, according to the number wanted, weight, the difficulty of casting, cost of patterns, &c.

Aluminum Wire in Coils.

(Brown & Sharpe, Standard Gauge.)

	Per lb
All numbers up to No. 24 (.064 in.) inclusive	$3.00
Nos. 15 (.05706 in.) to 23 (.0z534 in.) inclusive	3.25
Nos. 23 (.02571 in.) and 24 (.0201 in.) inclusive	3.50
Nos. 25 (.0179 in.) and 26 (.01594 in.) inclusive	3.75
Nos. 27 (.014195 in.) and 28 (.012641 in.) inclusive	4.00
Nos. 29 (.011257 in.) and 30 (.010023 in.) inclusive	4.25
No. 31 (.008928 in.)	4.50
No. 32 (.00795 in.)	4.75
No. 33 (.00708 in.)	5.00
No. 34 (.00630 in.)	5.25
No. 35 (.00561 in.)	5.75
No. 36 (.00500 in.)	6.25
No. 37 (.00445 in.)	7.00
No. 38 (.003965 in.)	8.50
No. 39 (.003531 in.)	12.00
No. 40 (.003144 in.)	16.00

Spooling, on 1-pound spools, 15 cents per pound extra.
Spooling, on 10-pound spools, 5 cents per pound extra.

Old Metals.

(Prices Paid in New York.)

Heavy Copper	₩ lb 12 ¢
Light Copper	₩ lb 11 ¢
Heavy Brass	₩ lb 10 ¢
Light Brass	₩ lb 8 ¢
Lead	₩ lb 4 ¢
Tea Lead	₩ lb 3½¢
Zinc	₩ lb 2 ¢
No. 1 Pewter	₩ lb 16 ¢
No. 2 Pewter	₩ lb 8 ¢
Wrought Scrap Iron	₩ gross ton $19.00
Heavy Cast Scrap	₩ gross ton 12.00
Stove Plate Scrap	₩ gross ton 8.00
Burnt Iron	₩ gross ton 6.00